THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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Reading Matter Contents.....page 50
Alphabetical Index to Advertisers " 121
Classified List of Advertisers..... " 123
Advertising and Subscription Rates " 57

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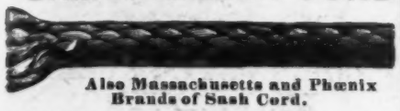

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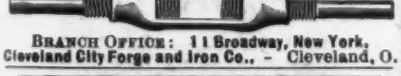

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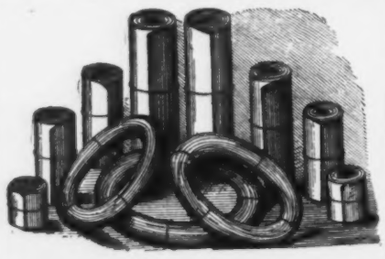

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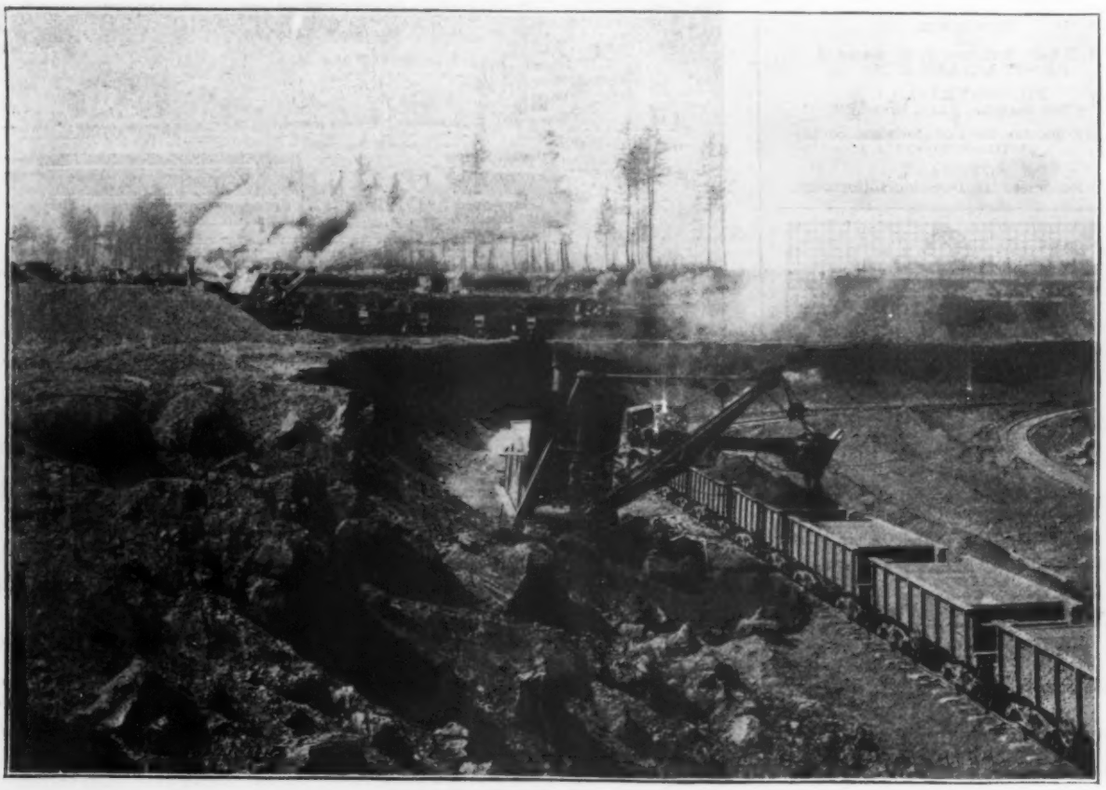
THE IRON AGE.

THURSDAY, NOVEMBER 9, 1899.

The Mahoning Iron Mine.

The advent of the American Steel Hoop Company on the Mesaba range adds another, and nearly the last, of the large steel making combinations to the list of those controlling, in part at least, their own ore supplies. This company, with an interest in the great Mahoning mine of the west Mesaba and with a further interest in the explorations under way by the Mahoning Ore & Steel Company in hard ore districts, have secured ore supplies for a great many years and stand in as good position to gather in others as any of their contemporaries, and at very much less cost than some.



Mine Shovel Working in Frozen Ore, April, 1899.

THE MAHONING ORE & STEEL COMPANY.

The Mahoning Ore & Steel Company control under lease ore mines on the western Mesaba of such extent that the present generation can have little personal interest in the question of their ultimate exhaustion. Early in the development of this range the company secured options for the exploration of some 12,000 acres of lands lying near and to the west of Hibbing and belonging to the timber firm of Wright & Davis. A total of 360 acres were selected in one connected tract along the north line of Township 57-21, being a strip 2 miles long and 1200 feet wide. Another tract close by was also taken, together with several others lying not far off, in the same township. While all of these have been explored sufficiently to determine value for mineral, only one, and but a portion of that, has so far been opened, and it will probably be some years before any of the rest are attacked.

During 1893 and 1894 the company, under direction of W. C. Agnew, sank a number of test pits and drill holes, 100 in all, over a portion of the north forties of Sections 1 and 2, lying a mile or so west of the village of Hibbing. Ore was found in quantity. As the surface was light, stripping was undertaken, and in the summer of 1895 the company shipped 117,000 tons to the Mahoning Valley furnaces that controlled their stock. The ore was found to have to some extent the usual disadvantages of Mesaba open pit mines—it was fine and liable to pack in the furnace; but it was of excellent chemical quality, and a large proportion was Bessemer. The presence of lumpy streaks running through the ore aided its physical composition to an extent that assisted furnace practice materially.

From the time the mine was opened till now stripping has been almost continuously under way, and there have been removed something over 1,000,000 yards of earth and bowlders, with the result that an area of ore some 1800 feet long and 800 to 900 feet wide at its greatest width has been uncovered to the sky. Stripping over this body of more than 30 acres has varied from a few feet to some 35 or 40, and the wisdom of uncovering the entire area has been amply demonstrated since, and especially this year, when labor has been scarce and high priced. For while it is one thing to add men to a proposition where they count largely in the output, it is another entirely to add a steam shovel and its crew of 50 to 70 men, that can make an added output of 3000 to 4000 tons every ten hours.

To the close of the present shipping season this mine has made a total output of 2,075,000 gross tons, of which 750,000 tons have been the work of the present year. Of

these shipments about 80 per cent. have been the Mahoning grade, which is guaranteed 63 per cent. of iron and 0.05 phosphorus, and 20 per cent. of the Beaver grade, which is about the same in iron and 0.07 to 0.08 phosphorus. There is a considerable amount of ore in the mine running 66 per cent. and better in iron, but no shipments higher than Mahoning are figured on. Of the 750,000 tons sent out this season there were about 485,000 tons Mahoning and 265,000 tons Beaver, the higher percentage of the latter being due to sales of non-Bessemer ore to outside consumers. It is not the policy of the owners of this mine, who are all consumers of ore in quantity, to come on the market with their product, and next year they will require for their own furnaces something less than 1,000,000 tons of this ore.

In opening the mine a very complete sampling system has been adopted so that the grades of ore the shovels are to encounter the following year can be determined with considerable assurance, with the result that a better mixture can be forwarded, it is believed, and the shovels worked with more definite understanding of what they are doing than might otherwise be the case. The entire ore body is laid off in squares, and every 50 feet pits are sunk the depth of a level. From these pits careful samples are taken and apalyses made, and the results plotted. In this way when the shovels are started at work in ore there is a general and quite close knowledge of what they will encounter. However, as the phosphorus is not at all regular, and comes in streaks and pockets, neither this method nor any other can be infallible, and the final determination by car assay is necessary. At Mahoning car samples are taken from each five cars, about 100 tons, which is a dock pocket full, and the result considered as the average of each car of the five. Each five car lot thus taken is dropped into the same pocket at the ore dock, giving a sample from the mine assay of what goes from every pocket to the vessel. At the mine office is a board with receptacles numbered to correspond with the dock pockets at Duluth, and in these are kept duplicates of the car assays and the pocket average, so that given the number of the pockets from which a vessel has loaded it is no trouble to determine the average of its cargo. So closely have these results tallied with the determinations made at the other end that but little trouble is taken to assay cargoes at the dock. For all this work a considerable and very busy laboratory is required at the mine.

No. 3 mine, that now opened, seems to extend east and west for a length of nearly 2 miles, with a width of from 600 to 1200 feet, though a large part of the area has not been sufficiently tested to fully determine its ore reserves. There is, so far as ascertained, a depth of ore over much of this area of from 100 to nearly 200 feet, giving a body of truly herculean proportions.

It is a peculiar and interesting fact that the north line of the ore seems to correspond very closely with the north line of this property, and that the southwestern limit is also, for a distance, quite closely analagous to the Mahoning line. To the south and east, however, are the vast deposits of the Lake Superior Consolidated Hull and Rust mines. These, with the Penobscot, appear to form a continuous ore deposit from the west limit of the Mahoning to the village of Hibbing, 1½ miles, and extending from its southerly line for a distance of ¼ mile or more. This ore body goes into and under a portion of the west side of the town of Hibbing, and the water works and well of the town are built on ore. Directly to the east and north of the town, and possibly connected with the big deposits to the west, are the Burt and Sellers mines of the Consolidated company, together with the town site and McGregor and other properties that have been explored enough to show a large amount of ore. It is quite probable that the various underground properties of the Consolidated company at Hibbing contain more ore than Mahoning, perhaps considerably more, and the gross tonnage to be mined about the town is beyond comprehension.

At Mahoning, while there is not room for the running of a train in a circle into the mine and past the loading shovel, as is the case at Mountain Iron, there is room for the putting past the shovels of from 10 to 12 cars at a time. These 10 to 12 cars, handled by a powerful loco

Fig. 2.—General View of Opening, Being Continuation of Fig. 3.

THE MAHONING ORE & STEEL COMPANY.

motive, are loaded at the rate of 5 tons a minute by shovels whose dippers contain 5 tons each. The shovels work into a bank of ore about 23 feet high, each of which corresponds to a level, and this ore is shaken up ahead of the shovels by powder. Holes are drilled the depth of the level; these are sprung with a stick of dynamite and then filled with five or six kegs of black powder, the explosion of which loosens the ore for the shovel. At this mine some 800 kegs of powder are used monthly, with the result that shovels rarely break down and a steady output of 3000 tons or more to the shovel can be maintained. Much time is lost in switching and changing, probably not less than three hours a day on the average. A shovel crew, including trackmen, engineers, machine men, train hands, &c., varies from 50 to 70 men.

is now building an ore dock 73 feet high and 65 feet wide, with 250 pockets of 250 tons capacity each, which will be ready in April, 1900. This will be by 13 feet the highest ore dock in the world, and both in width and capacity per pocket it will lead all others so far planned. It is probable that shipments from the Mahoning next year will amount to 1,000,000 tons.

Some years ago the Cambria Steel Company bought a half interest in the Mahoning, and later the Republic Iron & Steel Company secured a small interest. Now the American Steel Hoop has a fourth, and the remainder is in the hands of consuming interests in the Valleys. It is a magnificent property, and has been handled with the highest skill and with the utmost efficiency. Its annual shipments have been as follows:

Fig. 3.—View Showing Two Ore Levels and Stripping Level.

THE MAHONING ORE & STEEL COMPANY.

At Mahoning the machinery equipment consists of three 65-ton shovels fitted with auxiliary engines on the booms for aiding the handiness of operation, and three 60-ton standard gauge locomotives. A portion of this equipment is maintained for a reserve in case of trouble. Mining is now done on the first and second levels. All stripping at the mine has been done under contract, Winston & Dear having had every yard of stripping since the mine was first opened.

There is a charge of 27½ cents a ton against every ton of ore from the mine in the shape of a royalty to the owners of the land, who originally took it for pine, and have sold that at a heavy profit on their investment. At the time these purchases were made there was no thought of what might lie under the surface. The Wright & Davis interests of Saginaw, Mich., have been the owners of this fee, but last year sold to the Eastern Railway of Minnesota, a subsidiary company of the Great Northern Railway. The mine is under traffic contract to the fee holders, and the rail rate to Lake Superior is 80 cents a ton. The haul is about 118 miles, being almost a semicircle. For the expected increase of traffic another year from this mine and others on its line the Eastern Railway

1895	117,884
1896	167,245
1897	519,892
1898	520,751
1899 (to date)	750,000
Total	2,075,772

At no time have these shipments approximated the capacity of the mine, and it is hard to conceive what it might do if rail, dock and vessel facilities were adequate.

The general aspect of the property is clearly shown in our engravings, reproduced from photographs taken by O. B Warren of the Mahoning Ore & Steel Company. The views Figs. 2 and 3 are practically a continuation of one another.

The workmen employed in the Ohio Falls Iron Works, New Albany, Ind., were so overjoyed at the starting up of the long idle rolling mills on the 25th ult. that they fired 50 rounds from a cannon on the river bank near by in the evening.

Press reports from Jeffersonville Ind., state that last week nearly 1000 men were idle at the works of the American Car & Foundry Company for lack of bar iron. The company have large contracts for such material, but their car orders seem to have been larger than anticipated.

Physical Characteristics of Malleable Cast Iron.—I.

BY ERASTUS C. WHEELER, DAYTON, O.

The advantages and necessity for uniformity in malleable, when the same is to be used in castings subjected to the frequent and non-equal strains incident to their locations on machines, railway cars, &c., and developed under so many dissimilar circumstances, combined with varying temperatures, make the question of physical characteristics one of great moment. Until within a few years ago the best guide, with reference to quality, has been the cold bending tests given after annealing, and if metal has proved soft and malleable under these tests the material was accepted as successful. This test is still, for a great many purposes, a most reliable one, when light castings are being considered. With heavier castings, however, when diameters are ¾ inch and over, it has been rather difficult to produce satisfactory cold bending tests, the main stay being in such cases the appearance of fracture after cleavage break or shear; and it is with reference to the latter class of castings that physical tests are most applicable. As all heavy castings are subjected to their service requirements when cold, it will be recognized that only in rare cases have they been called upon to withstand service involving any noticeable deformity in original lines.

The successful casting is one which will withstand such service and still present the same lines as before. The material need not be so high in tensile strength to accomplish this end that malleability should be sacrificed. Malleability in heavy castings does not convey the same meaning when comparison is made with light castings. In light castings it is a soft, pliable and contortionable condition. In heavier castings it is the ability to receive shocks and blows without breaking or bending, and this in no degree means excessive tensile strength or excuses shortness and hardness. The questions are often asked, What will your iron stand? What can be done with it? Will it bend back upon itself? All are quite natural questions, but when speaking of heavy work they do not exactly fit the case. Nor is the M. C. B. drop test for draw bars a satisfactory test for quality. There have been couplers known to stand a number of blows in excess of the prescribed specification, but in service the group represented by the tests has failed signally. There is certainly some patent cause for this, not easily explained. The perfection reached in open hearth steel casting is directly due to the lines drawn relative to chemical and physical limits. There are as yet no specifications for malleable touching either, although one railroad in the East has designated the tensile strength desired in its castings. It is a question whether malleable concerns are prepared at the present moment to guarantee their product following somewhat these lines, as there has not been that liberal usage of the laboratory and its accompanying advantages to warrant confidence in each succeeding heat poured. But it is believed that the near future will find all prepared to welcome specifications.

There will be no greater incentive possible to any concern than the knowledge that they are working to "limits." As it stands to-day, the make up of metal varies with every individual concern, and while thoroughly reliable for local usages, suffers by comparisons in the interchange of parts sometimes necessary in railroad practice. With the advent of restrictions will come the uniform shrinkage so eagerly wished for at present. A physical test for malleable iron which calls for more than 45,000 pounds does not guarantee the ideal metal for railroad work. It will possess that doubtfully beneficial strength which shows to great advantage upon reports, yet has in it an element of hardness which precludes the possibility of long service. Physical testing is just beginning to attract the attention due its importance, and perhaps the delay in this matter has been caused by the fact that malleable, like steel in the past, has now passed through all of its experimental phases. The idea of physical specifications is very new, but it will prove a most excellent ground gainer to the careful manufacturer, whose pride in his output amounts to a question of honor. With the adoption of physical standards will arise the necessity of employing chemists in all works, for the effects of the metalloids upon physical characteristics are well marked. It cannot but prove to be a source of great satisfaction to careful producers, for they will be guarded with a bulwark of safety. The malleable casting of to-day is one of the greatest offerings in the whole iron industry, representing as it does many long years of patience in perfecting it, and yet the real work is only begun. There are many concerns making good malleable, and not a few better than before. The reason seems quite obvious. A few years ago chemistry was adopted into the malleable art and was stamped a great thing, but in some localities it was not entertained with the respect due its worth. Questioned and suspected at all points, it was finally discontinued, with the result that some firms have gained nothing whatever from the experience, while others are enjoying the undeniable benefits procured by judicious management. The future development of the malleable casting must be along the lines of chemical and physical testing.

The Influences of Heat Conditions in Furnaces Affecting the Physical Characteristics.

The heat treatment of metal during melting and annealing has a very important bearing upon its developed tensile strength, elongation, &c. The generation of excessive temperatures always promotes the chances of burning, and while metal may be burning the chemical aspect changes but little, while the molecular composition is receiving a shock from which it never recovers. What is burnt iron? And why does iron become susceptible of burning? These are seasonable questions upon which there has been considerable discussion and many theories advanced, yet there are many skeptics upon the subject. Iron is burnt mainly through the generation in melting furnaces of higher temperatures than those prevailing during the initial casting at blast furnaces. Superheated metal is always to be feared regarding quality. When a heat is charged in which all the metal is "low" or high silicon pig the opportunity for burning is not as great as in heat charged in which the metal is "high" or low silicon. The first mixture has an element of contained heat to balance heat of blast while melting, but the latter has no resource in this direction whatever. If these heats were charged following each other there would be, nine out of ten times, no changes possible in the method of firing, consequently no great variance in heat of furnace, and yet there should be some counteracting agency at work in the high mixture to offset excess heat of the low mixture. Superheated metal, or metal not high enough in silicon to hold fluidity, is readily discernible in ladles by the rapidity with which it sets. This metal will in the physical tests show considerable tensile strength, but a small percentage of elongation. This latter is due to the fact that the "clinging" propensity of the molecules has been injured beyond redemption. There is no tearing of the metal in testing machines previous to the break; it "goes" all at once and there is that omnipresent heavy white edge to characterize it. The mixture high in silicon should obtain its tensile strength from its silicon-carbon content and elongation from the undisturbed state of its molecular condition. The mixture low in silicon should receive its tensile strength from the density of the molecules and its elongation and reduction of area from the low carbon content.

When the heat of blast through the melting furnace is too strong, owing to an excess volume of air being introduced, the metal after melting will start to oxidize. This metal upon reaching its crucial stage will then be in condition to burn readily, having already exhausted considerable of its reserve qualities. It will be readily seen that this condition will affect the tensile strength most naturally.

The very choicest irons thus turn out poor material, whereas if the heat had been allowed to "come up" slowly we could have anticipated the best results. A well calculated heat will (unless something unforeseen occurs) invariably produce excellent results if worked slowly.

The action of the annealing ovens is also well defined in this direction. Whether the fuel used be coal, coke, gas or oil, the result will be the same if heat is brought to its highest point before the metal is ready to receive it. Burnt iron in the anneal is no uncommon feature, and, generally speaking, it is the result of carelessness. The real value of the annealing department is very often overlooked. It is often in charge of men whose compensation is low and who (to their credit must be said) do their work, as a rule, in proportion much better than their companion foremen of other departments. But here, as elsewhere, there has not been that confidence in their work which should guide them. They work by precedent and ask no questions. The theory of the anneal is sometimes a ticklish one with them. The most carefully prepared metal from melting furnaces can here be turned into worthless castings by some slight inattention of detail. The highest point in temperature for the annealing should be registered in each foundry, and kept there by the daily and frequent usage of a thermometer constructed for that sole purpose. The uneven workings of furnaces accounts for many a batch of rejected castings. These latter conditions are more likely to occur in plants where coal and coke are used in ovens, as it is simply impossible to regulate heat under these prevailing circum-

stances. With oil and gas the danger is greatly removed and, barring occasional changes in pressure, the heat is uniform. Changes in the heat will at once affect the quality of iron. Steady, continued heat insures soft castings, while unequal temperatures destroy all chances for successful work, though the initial metal was of the most excellent quality.

The question as to the effect for good of charging the packing with sal ammoniac is at the present moment being agitated very generally, and it is with some hesitancy that the writer expresses himself. There are some concerns who never charge their packing, and claim as beneficial results as those using the prepared packing. They claim that there is nothing which anneals but heat. However, fact is fact!

The experiment was tried, and most successfully. One set of test pieces was taken and packed in "dead" packing and the other in "charged" packing. These bars were poured in each instance from same heats, from same ladles and in the same molds, and were packed in furnaces with the heat conditions alike for both. With packing charged in some manner the castings will be softer, having more elongation and greater reduction of area.

Unprepared or "Dead" Packing.

Number of test	Total carbon, hard iron.	Total carbon, soft iron.	Tensile.	Elongation, 6 inches.	Per cent. elongation in 6 inches.
3812.....	3.23	3.01	48,600	0.37	6.16
3831.....	3.39	2.92	47,400	0.30	5
3851.....	2.97	2.90	46,800	0.27	4.50
3861.....	3.10	2.90	47,400	0.31	5.16

Prepared or "Live" Packing.

Number of test.	Total carbon, hard iron.	Total carbon, soft iron.	Tensile.	Elongation, 6 inches.	Per cent elongation in 6 inches.
3812.....	3.23	2.90	48,900	0.43	7.16
3831.....	3.39	2.81	45,600	0.33	5.50
3851.....	2.97	2.72	48,600	0.36	6
3861.....	3.10	2.82	45,900	0.34	5.83

These tests show unmistakably the treatment due a physical test by proper handling of annealing department. Be not deceived. It is true that without preparation of the packing the annealing may be carried through, and the appearance of the castings for months may not vary, but they will not be soft. And in the case of prepared packing the identical same test bar gained from 1 to 1½ per cent, in elongation in all cases. The discontinuance of charging packing is an economical move with reference to handling work cheaply, but in the instance of heavy work it is costly practice in the end.

Chemical Composition Affecting the Physical Characteristics.

That the chemical components exert a powerful influence upon the strength of iron is an assured fact, though not as fully understood in the case of malleable as with gray iron and steel. The metalloids most injurious would be singled out by the proposed specifications and limits placed thereon. Here again will that ever prominent feature of heat conditions assert itself. The metalloids occurring mostly in pig iron may be grouped with reference to their peculiar effects upon the physical showing of tests, and thus we would have in the finished metal silicon, manganese and graphitic carbon working together for the strength, and sulphur, phosphorus and combined carbon affecting the tensile strength. With silicon and manganese in their certain and relative proportions there can be no doubt of their beneficial action toward strengthening the product, and almost, it may be said, when in excess to the point of "shortness." Very often the metal has shown in tests and finished castings a steely fracture, and almost invariably has the same been explained by the presence of too much silicon. Chemical research has also demonstrated it. When the silicon is about 0.75 in finished metal it will show higher tensile strength and less elongation, for the reason that had the same mixture been properly worked the silicon would have been reduced, but now it resembles, after a manner, gray cast iron, with its correspondingly high silicon content. With this high silicon comes a resulting condition—namely, higher carbon in the graphitic state. There cannot be a high silicon and low carbon in material, as these two elements must act jointly in eliminating each other. The low silicon-carbon content must be maintained when calculating heats in which strength is desired. Silicon holds the carbon in certain ratios, as in the making of steels. That low total carbon is the secret of attaining reduction of area and elongation is demonstrated beyond a possible doubt. In the following tests there will be found some of these facts demonstrated—namely, with low silicon and carbon comes the reduction of area and elongation:

Number of test.	Silicon.	Total carbon.	Tensile.	Reduction of area.	Elongation in 6 inches.
219.....	0.62	2.20	47,350	3.27	5.33
227.....	0.51	2.40	48,950	3.42	6.50
228.....	0.58	2.32	45,370	4.33	5.83
231.....	0.47	2.07	42,050	4.83	7.83

Manganese in the latest practice is kept high, mainly with reference to the combining of carbon in the hard iron, with that easing off of liquid shrinkage so prevalent in the older working. In the anneal manganese stands practically unaffected by the heat generated there, and so is an element of strength all through. The reduction of area and elongation are the direct results of low carbon. It is simply a metallurgical impossibility to have the reductions, &c., with a high carbon content. With sulphur and phosphorus comes a weakening of malleable. Their action and effects are clearly drawn, both having a hardening tendency, making metal stiff. Often in malleable foundries castings containing carbon in the graphitic condition are passed through the hard iron inspection to anneal, and these castings show high tensile figures, but with small reductions. To obtain an iron which will work under the hammer while hot and without caking (this is a very trying operation) there must be this low silicon-carbon-phosphorus feature. Malleable iron with high carbon will not bend back upon itself. The following figures are from heats in which these negative features have been prominent:

Number of test.	Per cent. sulphur.	Per cent. phosphorus.	Total carbon.	Tensile.	Reduction of area.	Elongation in 6 inches.
220.....	0.052	0.272	2.72	49,500	1.07	3
242.....	0.061	0.197	3.01	49,000	1.23	2.33
247.....	0.047	0.216	2.42	47,620	2.02	1.83
248.....	0.058	0.172	2.67	51,000	0.82	1.50

The most destructive features of high sulphur and phosphorus are the small cracks, like incisions, over the surface of castings. In physical testing these cracks play a considerable part in the question of elongation, too small at times to be seen, yet the stretch of the metal taking place in these apertures leaves no great elongation in the metal. The combined carbon in annealed castings, which is, in most cases, very low, still has a hardening effect. Though not prominent, it still contributes. A very beneficial move was made some time since by a blast furnace management in Ohio, when they put a burden of selected ores in stack and cast the iron into iron chills. This iron was ideal for malleable, having a low silicon-carbon content, with phosphorus and sulphur in reasonable limits, and was a great step forward toward the end hoped for in coke iron. But at the time of its initial appearance it was not taken up with the favor it should have received, and was therefore not appreciated, being thought premature. A heat of this pig metal under the writer's observation developed the following somewhat remarkable results: Forty-seven thousand pounds tensile strength, 4.33 per cent. reduction of area and 8 per cent. elongation. Stiffness with malleability. It was a distinct move in the right direction toward uniformity of material.

Physical Characteristics of Malleable Iron Before Annealing.

In considering this topic we will call the heat test—*i. e.*, the test made at the furnace to determine whether carbon is in combination—a physical one, and the endeavor will be made to demonstrate that this test, while carrying great weight as to the condition at the point of pouring the metal in the furnace, does not possess the necessary reliability and does not, strictly speaking, furnish a fair criterion of the metal. Here again is encountered a heat condition. A furnace charged with 10 or 12 tons of metal, and taking from one-half to three-quarters of an hour to run out, according to the size of the tap hole, cannot produce metal which may be called uniform. As soon as metal has been brought up to its highest heat, carbon being in combination, the quicker it is gotten out of the furnace the better will be the ensuing product. After the highest heat point has been reached the continued blast necessary to maintain the heat in the metal to a suitable point for pouring works havoc with those chemical metalloids which affect fluidity, but, on the other hand, enhances the chance of a better iron physically by serving to reduce the carbon and silicon. Thus it will be seen at a glance how impossible it is to rival open hearth steel regarding uniformity, or even, in many cases, a well managed cupola on gray iron. In open hearth steel practice, when carbon and silicon have been reduced to a certain specified point, the "heat" is drawn in bulk and there is no further chance for a chemical or molecular change. In gray iron cupola practice new raw material is constantly coming in contact with fuel, and insuring, in a way, the continued grade of metal at point desired. In

the air furnace, on account of the length of time the liquid is kept in contact with the flame incident to pouring, it of necessity affects the molecular conditions, and in the case of pouring heavy castings (and this is the class of work being considered under this heading) the last iron out is better than the first. There cannot be a doubt but this fact accounts in a measure for the variations met with in material after the anneal.

In heavy work mixtures the first metal poured from the furnace will be "softer," or higher in total carbon, consequently inclined to be of an open grain, and the last metal is denser. being lower in total carbon, &c. That there is a marked and influencing difference between extremes of heat (from the moment the metal is tapped until run out), which explains many breakages, is clearly demonstrated by tests here submitted, taken in each instance from same heat at extremes:

First Iron.

	Total carbon.	Silicon.	Tensile.	Elongation in 6 inches.
261	3.52	0.91	46,500	4.33
263	3.37	0.72	52,000	3.37
265	3.42	0.68	49,000	2.93
267	3.29	0.89	43,000	3 33

Last Iron.

	Total carbon.	Silicon.	Tensile.	Elongation in 6 inches.
261	3.23	0.62	42,700	6.16
263	3.09	0.68	46,000	5.23
265	3.27	0.62	42,000	4.27
267	3.07	0 72	42,000	3.33

In keeping this idea of desired uniformity ever before us, the question naturally arises, How can the result be otherwise, using the present reverbatory furnace? With light work mixtures the differences are not marked to any great extent. In heavier work there is a remedy, and one tending toward a possible solution of the question. It has been the writer's privilege for two years to have charge of several Siemens-Martin acid open hearth furnaces producing malleable iron, and during that period he had great opportunity to study the problem in hand, and believes that thorough uniformity is possible and necessary.

Owing to a peculiar foundry construction it was not possible for the molders to catch the metal at furnace spout, and it was not practicable to carry metal to them in "bull" ladles. Therefore the whole heat of 8 tons was tapped into a previously heated ladle and conveyed by electric crane to a suitable place in the foundry for pouring. The tests at the furnace were made until just the point desired was reached and then the furnace was tapped. In less than one minute the contents were in the ladle away from any possible further chemical or molecular change. This metal was uniform! The results of this peculiar practice gave the castings thus produced a great prestige over the ordinary air furnace metal. The physical tests were most encouraging. The adoption of this style of furnace in malleable works would be a most radical change in founding, though not practical in present erections. But with the necessity of a better and more thorough refining of coke iron this idea is brought forward as possibly an outcome of the situation. The most satisfying feature about it is that it is no experiment. Here we have at this early day a thoroughly advanced material claiming the attention of more thoughtful producers.

Some of the physical tests are remarkable and show to great advantage the points mostly desired in railroad castings:

Number of test.	Tensile.	Reduction of area.	Elongation in 6 inches.
A	52,000	6.42	7.33
B	49,000	10.12	6.50
C	48,000	11.12	7.00

The appearance of hard iron tests are forerunners of the quality of iron after annealing. Seen under the magnifying glass are many peculiar phases, all of which have directly traceable bearings upon the resultant product. In the light work mixtures the tests show a distinctly rough and disjointed condition of the particles, owing to the fibrous nature of the metal when in hard iron, and, having a high carbon content, break with the toughness of original pig metal, there being in such instances but a small loss in carbon. After annealing, this metal, which in the hard iron was so tough, is now lamentably weak, owing to this excessively high carbon.

In the tests for heavy work mixtures the microscope reveals an entirely different aspect. There is that crystalline glacial formation, converging toward the center, owing its formation to the intensity of cooling strains, and which in many cases when iron is run too "high" causes castings to crack. Then, again, is found a test, with crystals as large as in a No. 3 iron, having a black circle around its edge. This almost invariably comes from a higher percentage of sulphur which has combined carbon higher, relieving somewhat the internal strains. A test piece 1 inch in diameter will show a complete combination of the carbon, but one 2½ inches in diameter, poured at the same moment from same ladle, will show graphitic carbon in bulk. In cooling tests in hard iron, preparatory to tapping out, the test will, if the carbon is combined, crack with a distinct ring, whereas if there was graphitic carbon present the latter would assemble in small groupings, holding the metal together and resisting the action of water. The most satisfying test in hard iron is the "wedge," giving, as it does, an early criterion of the capabilities of the heat. This test acts not only as a physical test, but also serves as a fluidity guide. When carbon is only about one-half combined with the iron, and two large tests should be poured, one of which will be cooled with water and the other allowed to cool by itself, the former will show small and regular clusters of graphitic carbon remaining, while the latter will resemble very closely a light colored gray iron, the crystal groupings being very dense. This latter condition arises entirely with the heat remaining in test for a considerable period, thereby holding that proportion of graphitic carbon remaining in suspension. In the test cooled with water the graphitic carbon, being in excess of the absorbing qualities of the iron at that particular point in heat, has been driven into the small group, as before described. These above mentioned phenomena occur mostly when the silicon content is high, particularly in light work mixtures, and show to great advantage the altering phases of carbon. Carbon is never thoroughly combined with iron until the silicon has been greatly diminished. A high percentage of silicon will hold carbon in suspension, preventing the combination so essential in heavy castings. In light work with its high silicon and carbon, metal is chilled and carbon is combined by contact with damp sand. In malleable cupola practice this is about the only method of affecting carbon, there being practically no molecular change possible in cupola while melting. A low total carbon and silicon—a certain percentage of sulphur being present—has the effect of giving test pieces their very close fracture, resembling the high state of glacial crystallization found in a No. 6 or No. 7 iron. Higher carbon and silicon and lower sulphur keeps the test pieces gray for a continued period, necessitating higher heat in furnace, while at the same moment affecting the life of fire brick in no small manner. The malleable casting, when cast, is subject to both internal and external strains, according to section. The malleable draw bar with surface chills and hard cores has been relieved of many detrimental features. But with the lighter castings and patterns of unequal diameters there is always the likelihood of cracking under casting strain. There are several safeguards against this trouble; one of the best is the usage of small quantities of aluminum in ladles.

There have been many shapes under personal observation which, when molded, presented a great question regarding best method for saving same when cast, the only resource in some cases being a cooling down in a previously heated furnace over night.

Physical Test Bars.

If there is to be any possibility in the future for uniformity in malleable castings there must be adopted some general method of testing, which will be broad enough to cover the inequalities of comparative workings. To sell malleable under chemical and physical clasifications is, at the present moment, an impossibility. This also was the history in steel castings for many years, but with far sighted experiment the point has been reached when producers may guarantee their metal with safety. The adoption of a test bar for general use could be decided by some discussion. We believe, however, that it should be exactly 1 foot long, and when molding a chill should be placed upon either end, to thus attain the greatest shrinkage. A micrometer reading should then be made of bar before annealing and shrinkage for shop practice established. Malleable concerns making agricultural shapes, &c., cannot afford to deviate in their founding practices, as castings which are supposed to fit snugly over other shapes must be made of metal in which the correct amount of shrinkage is assured. When metal is said to shrink ⅛ or 3-16 inch to the foot it is understood that this is hard iron shrinkage in all cases. The metal in annealing expands, and finished product shows rarely over 1-10 inch shrinkage from original measurements, bringing it finally close to gray iron shrinkage.

To illustrate above statements the following figures will prove interesting, one set showing hard iron shrinkage and the other set the shrinkage found after anneal, the test bar being exactly 1 foot long:

Hard.	Soft.
0.225	0.090
0.225	0.100
0.235	0.125
0.237	0.087

The above figures represent a very fair working, no freak heats being considered in figures given by writer. A very convenient form for the bar is a round section which figures about 1-3 square inch. The square bar is absolutely without one redeeming feature when considering for malleable work. The pattern should have 6 inches in the clear in center and be enlarged toward ends for the grips of the testing machines. In molding bars the gates should be cut upon the side of the bar near the ends, but not on the ends. The pattern should be well proportioned, bringing the larger end sections to meet the smaller middle section by an easy gradation, thus avoiding the shrinkage in bars which causes them to break in the grips of the machines. With the present air furnace practice test bars should be poured as near the middle of the heat as is possible. The number of each heat being molded upon the end of the test bar will, while following the physical results, also furnish a reliable guide in determining the chemical composition of any heat desired. The test bar is the surest method of following a heat's working through the process. The matter of having bars tested brings the matter down to a question of local coloring. Many concerns will argue that the physical test is not of enough importance to them to warrant purchasing a machine for their use. Physical testing is a recognized necessity with all the larger concerns producing railroad castings and these works will have their own apparatus. A very good plan for smaller works to pursue would be to make some arrangement with parties having machines for a test at least once per week.

Riehlé Bros., Philadelphia, manufacture a small machine, 50,000 pounds capacity, which is ideal for malleable works. Since the test bars are 1-3 or ½ inch diameter the capacity is far beyond any possibility in the metal. This machine, when connected with a 1 horse-power motor, is very convenient.

Advantages Anticipated Physically of a Basic Malleable.

There is not one branch of the iron and steel industry, with the exception of malleable cast iron, which has not undergone some very radical changes in mode of production during recent years, and all have proved to be benefits physically. With the tightening of the iron market and loss in choice of buying iron, the producer finds an awkward situation to face in the maintenance of uniformity in castings. There must be a new malleable furnace projected ere long. The moment is more than ripe for its introduction, and when it does come may it combine some slagging and absorbing features with its melting hearth. The inability of individual blast furnaces to procure desirable lake ores, by reason of the absorption of these mines by the trusts, compels the smaller furnaces to depend greatly upon local ores for their main stay. These latter ores are so high in objectionable impurities that they make the iron (being used in such a branch as the malleable, where every impurity is under suspicion) a quite undesirable factor in burden. There is no bad or worthless pig iron. There is a method of using it all, irrespective of its inferior quality. We all recognize how hopeless it is with present constructions to eliminate sulphur and phosphorus. There seems no escape from the metalloids. And it is also recognized that great benefits physically would result with their absence. The silicon and manganese are distinctly controllable, or ought to be, with good judgment. As in the instance of silver and gold, we do not wish for a pure iron; that would be a weak affair, and so, therefore, a reasonable amount of alloy of the right kind is desirable. There will be many objections raised with the withdrawal of phosphorus as detracting from fluidity, but all these seeming stumbling blocks will be readily overcome with careful experiment. With a prepared lining and the employment of a flux this anticipated furnace will revolutionize malleable methods. There is no doubt that the annealing will be shortened in no small manner. The writer places great confidence in the idea that this proposed melting hearth will be modeled after the Siemens-Martin. Producer gas is so readily controlled and heat conditions so uniformly alike that here, as nowhere else, seems the possible outcome of the new furnace. This new idea iron should show a tensile development of 42,000 pounds, with an elongation averaging 6 per cent. in 6 inches. The unquestioned feature of uniformity will commend itself at first glance, knowing, as we do, the difficulty experienced in present furnaces to produce succeeding heats like former ones. The feasibility of the basic open hearth to handle malleable is not doubted. It has been melted successfully in the acid open hearth and the basic is but a step further on. The field, now debarred, which the introduction of the proposed furnace would open is as large as that attending the development of radical changes in other branches of the art. Irons which are now distinctly off grade could be reclaimed and put into market on a par with those of known higher gradings. Foundry irons with phosphorus at 2 per cent. and over could be worked without any trouble whatever. No matter how high the percentage of impurities may be the metallic iron is as pure in a foundry iron as the highest grade Bessemer open hearth pig irons, for if the impurities are removed the resultant metal cannot but be good. The possibilities of this proposed furnace for handling malleable are as yet to be developed. There will be some opposition to overcome by projectors, but the end is assured as certain. It should commend itself to careful managements as a great step onward toward the betterment of a now sometimes uncertain quantity.

President Diaz on Mexican Industry.

At the opening of the present session of the Mexican Congress President Diaz said in his message that since April of the present year 210 km. (about 126 miles) have been added to the railroad system of the country. The increase is contributed to by the Mexican Central Railway with about 22 miles, the San Rafael Railroad with about 31 miles and the International with about 13 miles. The Mexico, Cuernavaca & Pacific Railroad has been extended to the Mexcala River and the road from Juile to San Juan Evangelista has been completed. The country's railroad system now aggregates 13,369 km. (about 8021 miles).

That the manufacturing industries have progressed is evidenced by the fact that the following plants have been erected since April of this year under concession from the Federal Government for the utilization of water powers:

The Industrial Company of Vera Cruz erected a dam on the Rio Blanco in order to utilize a volume of water which under a suitable elevation produces 1500 horse-power, consumed in the spinning and weaving factory of Santa Rosa, inaugurated in May of the present year; the Industrial Company of Orizaba constructed another dam on the Tlilapam River with a race of 1700 m. in length, conveying the water to four turbines connected with dynamos developing 2250 horse-power; the electrical energy thus generated is transmitted by means of overlead wires to the Rio Blanco cotton factory; the San Ildefonso Company have completed all their water works on the Monte Alto River, including an aggregate of 25 km. of races, with dams, sluices and other engineering works of importance; along the Tlalnepantla River 25 km. more of races are about to be completed. The ensemble of these works, with their respective electric plants, will produce an effective energy of 5500 steam horse-power, which will be transmitted to the city of Mexico. In the district of Atlixco, State of Puebla, another company have erected water works sufficient to produce 1125 horse-power to be utilized in a new spinning and weaving factory. Still another company have completed water works on the Cuautitlan River of sufficient importance to produce 810 horse-power. The developing of the manufacturing interest is also proved by the increased value of the exportation of manufactured products, amounting in the last fiscal year to more than $2,600,000, showing an increase of more than $700,000 over the preceding year. A considerable increase is also observed in the importation of machinery, copper wire, iron, steel and coal. A corporation have recently been organized in Europe, composed of firms of high standing in Paris, Berlin and Geneva, to undertake industrial enterprises in the republic.

During October *The Railroad Gazette* noted orders for 33,023 cars of all kinds. Of this number 19 418 were box, stock, furniture and refrigerator cars; 10,781 were gondola and coal cars, 1700 were steel cars, 810 were flat cars and 314 were passenger and street railroad cars, 100 of the latter being ordered for export. Of the 33,023 cars, about 1700 are to be built by railroads at their own shops. Orders for 323 locomotives of all kinds were also noted, of which about 38 were for export. The division of types of the 323 locomotives was approximately 242 freight locomotives, 46 passenger and 35 switching locomotives. Nearly 100 more locomotives were ordered than in September, while about three times as many cars were ordered in October as were noted in September. The October orders amounted to two and one-half times as many as were ordered in August, although the record for that month was a large one. The cars ordered during October almost equal in number those ordered in June, July, August and September combined. Some of the large orders placed in October have been deferred for many weeks on account of high prices.

☞ The statement appearing in *The Iron Age* for October 26 that the Penn Iron & Coal Company have sold their Dover blast furnace at Canal Dover, Ohio, to the Federal Steel Company proves to be incorrect.

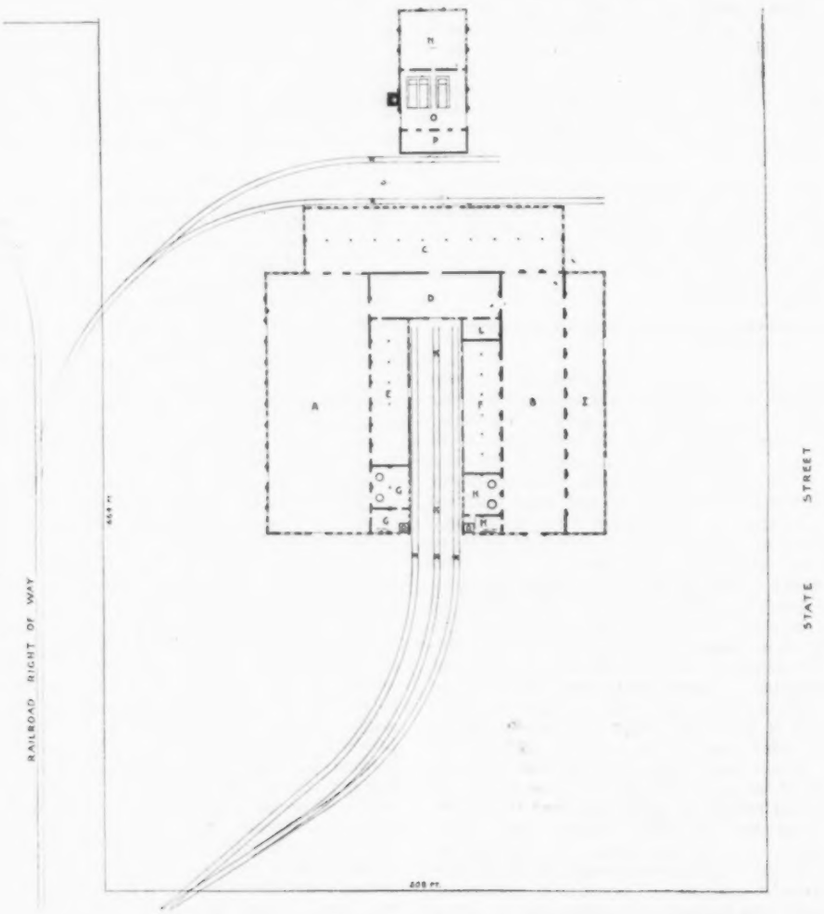
The Sargent Company's New Works.

The Sargent Company, whose general offices are in the Old Colony Building, Chicago, are building a new plant at Chicago Heights for the manufacture of steel castings for the general trade and cast iron brake shoes for railroads. Steel will be made by the Tropenas process. Their present works at Fifty-ninth and Wallace streets, Chicago, are inadequate to meet the requirements of their steadily increasing trade, and as no more ground was available in that vicinity it was found necessary to seek a location elsewhere. At Chicago Heights they have secured a large tract which will give them ample room for future growth, and is besides most favorably located for railroad facilities. The new plant is expected to be a model of its kind. A ground plan is herewith shown. Two large buildings are being erected, one to be used as an iron foundry and the other as a steel foundry, running parallel with each other, capable of being enlarged when necessary without changing the general relation of the

O—Boiler room, 47 x 52 feet.
P—Coal room, 16 x 52 feet.
Q—Elevators.

This arrangement of buildings, tracks, storage of raw materials and shipment of finished product is designed to reduce to a minimum the cost of handling. A direct course is assured for everything in the process of manufacture toward the cleaning room or finishing and shipping department. The buildings have further been specially designed to secure plenty of light from all sides and clear space for handling materials and products. The foundries have louvers and the cleaning room skylights for furnishing light in addition to that received from the side and end windows. All the buildings are one story high and substantially constructed of brick and stone.

The iron foundry has a clear space for its entire width of 80 feet, accomplished by the use of a roof truss specially designed by the architects. It is equipped with two cupolas, one 60 and one 72 inch. These are located outside of and at one corner of the room, as shown in the



GROUND PLAN OF THE SARGENT COMPANY'S NEW WORKS.

departments, and separated by a court 40 feet wide, to accommodate three railroad tracks. A cleaning room connects these two buildings at one end and on either side of the court are storerooms for supplies, conveniently located to receive deliveries from cars. The cupolas are placed near the court, so that pig iron and scrap can be easily elevated to the charging floors from storage yards alongside the tracks. The power house is in the rear of the cleaning room and separated from it by tracks, one of which is used for the delivery of fuel and the other for the shipping of castings from the cleaning room, the latter track being depressed for convenience in loading cars. The complete details of buildings and dimensions are as follows, the letters used referring to the letters on the ground plan:

A—Iron foundry, 80 x 200 feet.
B—Steel foundry, 50 x 200 feet.
C—Cleaning room, 50 x 200 feet.
D—Core room, 35 x 100 feet.
E—Sand room, 30 x 112 feet.
F—Sand room, 30 x 100 feet.
G—Iron cupola room, 30 x 53 feet.
H—Steel cupola room, 30 x 48 feet.
I—Molding room, 30 x 200 feet.
L—Core oven, 15 x 30 feet.
M—Railroad tracks.
N—Engine room, 45 x 52 feet.

ground plan. From the cupolas the melted metal is carried the full length of the foundry in a large reservoir ladle traveling on a narrow gauge track, from which it is delivered to buggy ladles, each operated by a single man and wheeled back and forth to the molds over an iron plate floor. The melting will be continuous in this foundry, a pouring gang being regularly employed the entire day. The company have successfully used this method of pouring for a number of years in their Chicago foundry and are therefore making no experiment in adopting it in the new one. Pneumatic molding machines are to be used, eight in number, built by the Tabor Mfg. Company, which will be placed in line lengthwise of the foundry and on the opposite side from the cupolas. Hoisting will be done by a 5-ton pneumatic-hydraulic jib crane and a number of air hoists. The blast for the cupolas will be supplied by fans driven by electric motors.

The steel foundry is arranged on a different plan from the iron foundry. While it is of the same size over all it has a clear span of but 50 feet, with a 30-foot annex. Covering the 50-foot floor will be two 15-ton Shaw electric traveling cranes, with 3-ton auxiliaries and several air hoists. At one side of the foundry near the end are two 60-inch cupolas, blown by a large fan driven by an electric motor. The most interesting feature of this foundry

remains to be described. Opposite the cupolas and in the foundry building will be placed three Tropenas steel converters, each with a capacity of 2 tons, and turned by special pneumatic-hydraulic gear. These converters will be used for the manufacture of all kinds of steel castings, from small castings now made in crucible steel to large ones for electrical and other special purposes. The Tropenas steel converter has already been described in these columns. It is the invention of Alexander Tropenas of Paris, is in use in a number of plants in Europe and has recently been introduced into this country. The Tropenas process was the subject of careful investigation by both the general manager and the superintendent of the Sargent Company in several of the foreign plants in which it is used, and they finally decided that it offered the most satisfactory method yet developed for the production of small steel castings and special grades of steel. The blast for the converters will be supplied by a special No. 4 Root blower, geared to a 50 horse-power electric motor.

The location of the core room and cleaning room is arranged so as to be equally convenient to both the iron and the steel foundry. The cleaning room is fully equipped with friction driven rattlers and self oiling emery grinders, all driven by electric motors. After the castings are finished in the cleaning room they are loaded directly into cars on the depressed track in the rear.

The power house contains two 72-inch by 18-foot horizontal tubular boilers having special rocking grates and blowers, two large feed pumps and a 300 horse power feed water heater; an 18 x 42 inch girder frame Reynolds-Corliss engine, built by the E. P. Allis Company of Milwaukee; a 150 kilowatt generator, built by the Western Electric Company of Chicago, and a duplex compound air compressor, utilizing over 100 horse-power of steam. This power plant is designed so that its capacity can be doubled with the growth of the plant.

The company's present works in Chicago comprise an iron foundry and open hearth and crucible steel departments for the production of steel castings. As soon as the Chicago Heights plant is ready for operation the iron foundry in Chicago will be discontinued, as the new iron foundry will have a capacity from two to three times as great. The crucible steel plant will be dismantled, as Tropenas steel will take the place of crucible metal. The manufacture of open hearth steel castings will, however, be continued in the old part, although eventually this department is expected to be removed to Chicago Heights.

The history of the Sargent Company is a record of continuous growth and enterprising development. Established in 1876 as George M. Sargent & Co., the name was subsequently changed to the Congdon Brake Shoe Company, and in 1892 the present title was adopted. No beaten path was trod but the company have always been among the pioneers in introducing new methods and improved processes. With the enlarged facilities secured by the new plant at Chicago Heights the company will undoubtedly attain much greater prominence in the trade.

The Pittsburgh Molders.

After an all day session in Pittsburgh last week the committees appointed to arbitrate the difference between the molders and the foundries in the Pittsburgh district adjourned without reaching an agreement. The whole question has therefore been referred to the Iron Molders' Union of North America and the National Founders' Association. These two organizations will appoint arbitration committees to settle the difficulty.

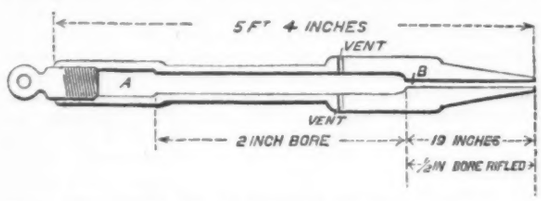
At the conference it was shown that the foundrymen have, since the first of the present year and up to the time that strike was declared, advanced the wages of their men an average of 10 per cent. The foundrymen produced the data to show this and offered an additional advance of 5 per cent. to all the molders and core makers employed, on condition that a contract be signed to make this advanced wage operative for a year. The molders and core makers insisted on their original demands, a $3 day wage minimum and 10 per cent. advance for the molders getting that amount or more, and a $2.75 minimum for the core makers and the 10 per cent. for the men getting that amount and more. Near the close of the session the men offered to drop the 10 per cent. advance for the men getting $3 and more, but would make no further concession, and adjournment *sine die* followed.

The arbitration conference was held in the offices of the Frank-Kneeland Machine Company, Smith Building, and was participated in by the following: Vice-President J. F. Valentine of the Iron Molders' Union of North America, John Loder, Charles Stanton, Frank Humphries, William Kantz and Joseph Preece of the molders; O. G. Morris, M. J. McNamara and J. W. Smith of the core makers, acting as the workers' committee, and the following representing the foundrymen that have agreed to the terms of arbitration: O. P. Letchworth of Buffalo, N. Y., president of the National Founders' Association; I W. Frank, William Yagle, Robert Taylor, George Mesta, J. H. Noble, George Hogg and F. H. Zimmers.

A Curious Experiment in Punching a Plate.

Under the above title the *Engineer* publishes the following account of an experiment which it designates as being "of a remarkable character:" The object was to test practically a view held by Edward Hoyle that the hydraulic action of liquid in a large cylinder through a small one might be employed to discharge a projectile with very high velocity and energy. The diagram herewith shows the gun employed. A powder charge was exploded at the breech end A, and drove liquid filling the large bore against the base of a projectile placed in the small bore B, and projected it with extraordinary velocity and energy. On the occasion in question the projectile consisted of a small disk ½ inch in diameter—fitting the small bore—and ¼ inch thick, weighing ¼ ounce. This perforated an iron plate ⅜ inch thick, fixed at a distance of about 7 feet 10¾ inches. Calculated as a projectile striking, by Tresidder's formula, the almost incredible velocity is obtained of over 15,000 foot seconds.

The inventor expresses himself on the trial as follows: "The plate was pierced without using water; 1 pound of white lead answered both for the larger shot and for the water cartridge. The charge was 6 ounces of coarse sporting gunpowder, and this would give to the white lead a velocity of 1000 feet per second, and the bores being proportioned as 1 to 15, or thereabouts, the velocity of the steel disk would be about 15 000 feet per second. On this principle a powerful man wielding a 14-pound hammer would give a velocity to the Lee Metford bullet of 5800



CURIOUS EXPERIMENT IN PUNCHING A PLATE.

feet per second. I aim at a long range, and these high velocities guarantee the long range as a matter of course. As to firing, if the gun was loaded at the breech in the ordinary way, and the smaller projectile rammed in from the muzzle at the same time—that is, if the loading was done simultaneously from the breech and from the muzzle—then I think it would not be slow.

"The theory of the gun is the theory of the common syringe. The gun has a smooth bore for about two thirds of its length, reckoning from the breech; the remaining one-third is smaller—one-half, one fourth, one-twentieth, or any proportion that may be desired. This bore is rifled. Suppose the bores to be as 20 to 1, and suppose a piston to be fitted into each bore, and a quantity of fluid placed between the two pistons, then if the larger piston be moved 1 inch the smaller piston will move 20 inches; the velocity will therefore be as 20 to 1, and this will be the case no matter what the velocity of the larger piston may be. Even if the pistons be two projectiles, their weights and areas being as 20 to 1, the velocity of the smaller shot will be 20 times that of the larger one, if the tube will stand, even if the larger shot strike the liquid with a velocity of 3000 feet a second, friction not being considered. Suppose the bores are as 2 to 1, we shall then have two shots with rates as 2 to 1, areas as 2 to 1, and velocities as 2 to 1; the penetration of the smaller shot will therefore be more than double that of the larger. The larger shot may be semi fluid; it will then be blown from the muzzle after doing its work on the smaller one." The above experiment is given as related with the designer's own views and comments. It should be clearly understood that these views are in no way indorsed, or the experiment regarded as having a significance in practical artillery science.

A workman in the stove foundry at Charleston, Ill., had an almost miraculous escape from death or serious injury a few days since. He was working over an emery wheel in the mounting room when the wheel burst. The wheel was 18 inches in diameter and 1½ inches thick and was running at a speed of 1300 revolutions a minute. One section of the wheel whizzed past his head and splintered a heavy joist above, another passed under his arm and cut through the base of a work bench as though a saw had been used, another passed between his legs, tore its way through the flooring and dropped to the floor below, and one very small bit of the stone struck him in the breast, leaving a slight bruise.

"The Age of Nickel Steel."

BY HARRY J. WILLIAMS, PITTSBURGH, PA.

During the year 1890 Hon. Benjamin F. Tracy, then Secretary of the United States Navy, received in confidence the information that Schneider & Co. of Le Creusot, France, had invented a new armor plate which contained about 3½ per cent. nickel. With characteristic American eagerness to procure the very best armor for the protection of its war ships, and with the view of making a thorough test of the best plate produced in other countries, an order was placed in Europe for three plates, one from England and two from France. The one from England was of the same character and composition as was then specified by the Admiralty for war ships. One of those ordered from France was of plain steel and one was nickel steel. These three plates were in due time set up side by side at the Annapolis testing grounds and fired at by a 6⅛-inch gun at a distance of 50 feet. The British plate was broken in pieces, the French plate was badly cracked, while the nickel steel plate suffered comparatively little injury.

This test proved very conclusively that the nickel steel plate was what the United States Government desired for the protection of its war ships. In fact, it was not only a revelation to the civilized nations of the earth, but caused a complete revolution in the manufacture of armor plate. Congress immediately voted $1,000,000 for the purchase of nickel, and the Department changed all its contracts for armor plate and specified nickel steel plates. Thus it was that in the year 1890 we entered upon the "age of nickel steel" through the initiative of a citizen of France. Its development was due to America's combining with it the Harvey process for face hardening nickel steel armor plate.

The nickel steel of commerce as used for the production of armor plate, driving and piston rods, tires, axles, propeller shafts, &c., is made by the open hearth process, and generally contains 3 to 3½ per cent. of nickel. The introduction of this small amount of nickel in steel gives us an increase in elastic limit of 75 per cent. and in tensile strength an increase of 30 per cent. over simple steel, without any impairment of the elongation or the reduction of area. A defect in a nickel steel forging will not develop, and does not necessarily mean that the forging will fracture at that point, as would undoubtedly be the case in simple steel.

These facts then further demonstrate to us that in the production of nickel steel for various commercial purposes we have a thoroughly reliable metal which is absolutely free from the treacherous brittleness due to crystallization so characteristic in simple steel.

When pure commercial nickel some years ago was selling around $7 per pound we were compelled to admit that the field did not look very inviting for manufacturers to experiment. At the present time, however, with nickel selling between 30 and 40 cents per pound, the production of nickel steel is growing to enormous proportions owing to its many virtues, which the modern manufacturer is compelled to recognize. How often we read of some catastrophe upon one of our great railroad systems, involving a terrible loss of life, and how often we have read that the accident was due to a defective rail, or axle. Does it not look a little like criminal negligence for a railroad or any other corporation to specify simple steel (especially Bessemer steel) where human lives are at stake when so valuable a material as nickel steel is available? Fortunately our railroad people are now specifying nickel steel for new equipment in their various specifications. While the first cost is somewhat more than that of simple steel, the additional extra cost of 3 or 3½ per cent. nickel at say 40 cents per pound is very insignificant, when it is considered that nickel steel will outlast simple steel several times in the general wear and tear.

The writer has a strong belief that it is only a question of time until our modern railroads will be equipped with nickel steel rails. As I make this assertion, I fancy that I see a smile creep over the face of our friend, the Bessemer rail producer, who produces it because he can do so cheaply. In reality it is dear at "half the money," owing to its unreliability in composition. If we must have simple steel for rails then let them be made from open hearth steel, which, as produced in this country, is far superior to the Bessemer product.

In the production of nickel steel by the crucible process numerous interesting and valuable results have been obtained. It has been my experience that for every per cent. increase in nickel contents there is a corresponding increase in the hardness of the metal, and a decrease in its ability to take a temper, until we reach 16 to 18 per cent. nickel. At this point the metal becomes exceedingly hard and extremely difficult to machine, but it can be worked, when heated, into almost any desired form by rolling, or forging, in the ordinary manner as practiced in manipulating simple steel. By continuing to increase the nickel contents beyond the point mentioned the material becomes softer, and at 25 per cent. nickel we have an exceedingly soft, ductile alloy which cannot be hardened in water, but is capable of being pressed, bent, rolled or drawn cold into various forms for bicycle spokes and parts, spoons, saddlery hardware, &c.

At the extreme hardness of 16 to 18 per cent. nickel extraordinary fine table knives may be produced, by simply forging to shape and continuing with light hammer blows until the heat disappears from the blade. After the knives become cold it will be found that the blades are very elastic, free from the danger of breaking when bent, like simple steel blades hardened and tempered in the usual manner. The knives when polished assume a most beautiful luster, tinged with a delicate blue so prized by the steel maker.

Crucible steel not containing over 5 per cent. nickel in combination with various percentages of carbon makes an extremely tough, tenacious product, suitable for edge tools, springs, &c. Experiments, however, in this direction have led me to prefer a nickel content of from 2½ to 4½ per cent., as I find a very marked decrease in the ability of the product to take a satisfactory temper beyond the 4½ per cent. limit. When kept within the limits mentioned, and when proper care is exercised in its manufacture, the product is an ideal tool steel of wonderful endurance, capable of great execution after forging to shape and hardening and tempering in the usual manner.

Since nickel steel chills rapidly it is necessary that the crucibles be removed from the melting fires at a good clear heat and that the casting be done immediately. It would be well to bear in mind that, owing to the great affinity existing between nickel and oxygen, a suitable flux must be used in order to eliminate the latter and to prevent the nickel from oxidizing during process of fusion. Otherwise the product will be a mass of spongy, seamy material unfit for commercial purposes.

The addition of nickel to simple steel appears to admit of a higher degree of heat in forging, rolling, &c., without danger of segregation. A very good demonstration of this fact can be had by introducing a few ounces of nickel to a mixture of air or self hardening steel, when it will be found that the material may be forged at a somewhat higher heat than is customary, and that the product now combines toughness with hardness, which is absolutely essential in the production of a first-class self hardening steel.

Pure nickel requires a temperature of 3200 F. degrees for its fusion, but the addition of carbon reduces the melting point very materially. A forged bar of pure nickel has a tensile strength of 90,000 pounds, and in a casting some 10,000 pounds less. The well-known fact that all alloys are stronger than the original metals from which they are combined is certainly very plainly demonstrated in the production of nickel steel.

In removing the crop ends from finished tool steel bars after hammering it is necessary to nick the bars very deep before attempting to break with a sledge, otherwise, owing to the extreme toughness of the material, considerable labor will be expended before they are finally removed; in fact, the probabilities are that the bars will bend before breaking unless they be nicked deeper than is the practice with simple steel.

Extraordinarily fine watch main springs, 0.008 inch in diameter and 0.115 inch in width, containing 3 per cent. nickel with carbon about 1 per cent., have been produced that could be wound and rewound upon a small mandrel in opposite directions a number of times without any impairment to the springs, and surpassing in elasticity the best cast simple steel. Excellent nickel steel pens, that glide over the paper when writing as though they were lubricated, have been made from steel with a nickel content of 4 per cent., and as the consumption of cold rolled simple steel for pen points is nearly 1000 tons per year a valuable market awaits the former product on account of its superiority over simple steel. Cold drawn wire containing from 20 to 30 per cent. of nickel made into bicycle spokes shows a wonderful degree of toughness, combined with the ability to swage and thread perfectly. Wire of this description has a tensile strength of about 190,000 pounds, and an elastic limit of about 130,000 pounds, and may be tied into a knot cold without fracture. Manufacturers of corset steels are desirous of securing a material that will not corrode, and at the same time be equal to tempered steel in elasticity. German silver and similar alloys will not answer, for the simple reason that they are not capable of being tempered, besides the copper contained in such alloys would soon develop verdigris. At present it is customary to use tempered steels wrapped in cotton drilling before inserting into the corset. This precaution, however, is only temporary, as rust soon makes its ap-

pearance through the fabric. Probably the solution of the corset steel manufacturer's troubles lies in the use of nickel steel, as it would make an admirable product for the purpose.

The uses of nickel steel as applicable to the various arts are so many that it would be impossible to enumerate them here. It is only necessary to remember that in what we term commercial nickel steel, such as contains from 3 to 3½ per cent. nickel, we have a product the elastic limit of which is about the same as the ultimate strength of simple steel with a tensile strength 30 per cent. greater. Nickel steel contains all the virtues of simple steel without the treacherous defects of the latter, and it appears to be only a question of time until nickel steel will replace simple steel, the same as the latter has replaced wrought iron.

In the manufacture of heavier articles of commerce for structural work, rails, ordnance, &c., the high elastic limit of nickel steel is especially advantageous and as important as a high tensile strength, for the reason that it is then capable of resisting severe blows and strains. In the present age of progress and advancement we can see no reason why nickel steel should not be universally used in the arts, unless perhaps the extra cost is an impediment. However, we must not overlook the fact that the price of nickel has declined steadily in the last 14 years, from $7 per pound to less than 40 cents per pound at the present time, and with the acquisition of the valuable Ontario nickel mines, located in the Sudbury district, it may be possible that lower rather than higher prices will prevail in the future. In any case we cannot disguise the fact that nickel steel has many advantages that simple steel lacks. Simple steel at best is only modified iron, and in the past it has, to a certain extent, been made to answer our purposes. The modern man who has followed our Government test reports upon nickel steel armor plate, &c., cannot fail to recognize the fact that a rich harvest awaits capital in the development of this more complete alloy for various commercial purposes.

Bids for New Cruisers.

Bids were opened at the Navy Department at Washington November 1 for the construction of six sheathed and coppered cruisers authorized by the last Naval Appropriation bill. The vessels will be of about 3200 tons displacement, with a speed of not less than 16½ knots. They will have twin screws and a battery composed of ten 5-inch guns, eight 6-pounders, two 1-pounders and four machine guns. The limit of cost fixed, exclusive of armament, is $1,141,800 each, and it is provided that not more than two of the vessels shall be built at one yard. The bids were as follows:

Moran Bros & Co., Washington.—One vessel on the Department's plans, $1,122,000.

William R. Trigg & Co., Richmond, Va.—One vessel, Department's plans, $1,027,000. Same company, bidders' plans, one vessel for $1,044,000; speed guaranteed, 18 knots; two vessels, same type, for $937,000 each. Same company, bidders' plans, one vessel for $1,073,000; same type, two vessels for $1,027,000 each. Same company, bidders' plans, guaranteed speed of 19 knots, one vessel for $1,079,000; two vessels, same type, $1,039,000.

Fore River Engine Company, Braintree, Mass.—One vessel on the Department's plans modified, $1,065,000; two vessels, same type, $1,020,000. Same company, bidders' plans, speed of 18 knots and bunker capacity of 866 tons, one vessel for $1,065,000; two vessels of the same type, $1,020,000. Same company, bidders' plans, displacement 3200 tons, speed 18½ knots; one vessel for $1,100,000; two vessels, same type, each $1,060,800.

Burlee Dry Dock Company of Port Richmond, Staten Island, N. Y.—For Department's plans, one vessel for $1,105,000.

Neafie & Levy Ship & Engine Building Company of Philadelphia.—Department's plans, one vessel for $1,080,000; two of the same type for $1,050,000 each.

Townsend & Downey of New York.—One vessel, builders' plans, $1,059,000; two for $1,055,000 each. Same bidders, Department's plans, one vessel, $954,500; two vessels, same type, $950,000 each.

Columbian Iron Works of Baltimore.—One vessel, on Department's plans, $1,116,000.

Union Iron Works of San Francisco.—One vessel, on the Department's plans, $1,041,900.

Bath Iron Works, Bath, Maine.—One vessel, on Department's plans, $1,041,650.

Lewis Nixon, Elizabethport, N. J.—One vessel, Department's plans, $1,039,966.

According to the official figures of the United States Treasury Department the supply of gold money in the country amounted on November 1 to $1,014,468,000. This is the first time in the history of the country that the gold supply has passed the billion dollar point.

Canadian News.

Port Colborne's Prospects for a Furnace.

TORONTO, November 4, 1899.—A public meeting was held in Port Colborne a few days ago to hear the proposals of the promoters of a new blast furnace at that point. The scheme was laid before the citizens by a Hamilton man, H. Carscallen, Q. C., and member of the Ontario Legislature. Two other well-known Hamilton citizens were with him in behalf of the scheme. Mr. Carscallen said he spoke for a number of capitalists who favored Port Colborne as the spot for a blast furnace which they intended to build. Welland, he added, was also regarded as a good location. Of course as Welland is down the canal heavy ore carriers could not bring their cargoes to it, and this they can do to Port Colborne, the Lake Erie end of the Welland Canal. Much more easily can they do so when the Government has expended upon improvements at that canal terminal the large sum voted by Parliament last session for the purpose. One advantage possessed by Welland which Port Colborne has not is railway competition. The former has three lines while the latter has but one. The furnace it is proposed to build would have, Mr. Carscallen said, a capacity of 100 tons of pig iron per day. One thing wanted from the town was a free site of at least 20 acres, convenient to the water. Further, Mr. Carscallen said, a cash bonus was expected. Several of the leading citizens spoke on the question. All were in favor of granting a free site, but few approved the idea of a cash bonus. They might go so far as to grant tax exemption and give free water. Another thing one prominent townsman proposed was to get the Government to give a water front. He also cited the promise of the Minister of Public Works to build derricks at Port Colborne whenever they should be required for the ore trade.

After the public meeting the promoters had a conference with the town council, in which they specified th amount of the cash bonus they would like to have—namely, $25,000.

A number of American capitalists have been looking over the ground between Port Colborne and Welland with a view to establishing smelting works near the peat works at Marshville.

Cost of Iron at Sydney.

The Montreal *Star*, which has had a series of long articles dealing with the iron and steel enterprises being pushed forward at Sydney, Cape Breton, treats in its issue of the 28th ult. with the cost of making iron there. It says that the Dominion Iron & Steel Company will have the advantage of knowing what has been accomplished by the Nova Scotia Steel Company in the manufacture of pig iron at Ferrona from Bell Island ore and Cape Breton coal, and in the manufacture of steel at Trenton, near New Glasgow, from Ferrona pig iron. The Nova Scotia Steel Company, the article states, have estimated that the cost of making pig iron in the neighborhood of Sydney Harbor would be less than $5.50 per ton, so long as the iron ore of Bell Island can be mined by open cut; when underground mining has to be resorted to the cost of pig iron will not exceed $5.83 per ton. Careful estimates made by the Dominion Iron & Steel Company are said to agree closely with these figures, being as follows:

1.8 tons ore	$1.80
1.25 tons coke	1.80
0.75 ton limestone	.40
Labor, repairs, incidentals	1.50
Total cost of one ton of pig iron	$5.50

Steel billets from this pig iron, it is estimated, will cost $10.50 per ton. In the *Star's* article these figures are compared with the average annual prices at Pittsburgh for the last 12 years, and of course the comparison shows room for big profits for the Sydney industry. A review of Canadian prices also affords equal encouragement to the friends of the Sydney works. This review shows that the lowest price ever paid for Hamilton iron at the furnace was $12 and the highest $23, while the lowest at which Ferrona pig sold in Montreal was $13.50 and the highest $24.50. Between the lowest of these prices and the estimated cost of production at Sydney there is an ample margin. It is further shown that Sydney pig can be laid down in Great Britain for $8 and steel billets for $13.

Shipyards for Collingwood.

Collingwood, a port on Georgian Bay, is in a fair way of getting a large shipbuilding plant. Arrangements are about completed for establishing there works for building full canal sized ships—that is, vessels having a 14-foot draft—or indeed ships of the largest capacity should orders for such be presented. Machine tools and entire equipment have been arranged for. J. J. Long, president of the Collingwood Dry Dock Company and one of the leading shareholders in a big lake transportation company, is prominently connected with the enterprise. Recently, it is stated on the authority of Mr. Long, Capt. Alexander

McDougall of Duluth, formerly general manager of the American Steel Barge Company, has become largely interested in the project and will doubtless be one of the directors. He is now assisting in the selection of machinery, machine tools, superintendents, foremen and men. It is expected that the works will be in full operation in five months, so that the first steel ship can be launched by the middle of the next season of navigation. Mr. Long refers to special arrangements having been made with regard to ship plate and other material, but what these arrangements are, he says, it is premature to tell. It is presumed that this material will be supplied by Western American steel interests with which the new company may be allied. The tariff interposes no difficulty to the importation of such material, as all the steel and iron used in the construction of ships is free of duty. This is the third shipbuilding enterprise that has taken shape since the deepening of the canals approached completion. The first is that of the Inland Transportation, which proposes to start in Toronto. The second is the Fort William Transportation & Shipbuilding Company, who are starting in Hamilton.

A Deal Affecting Algoma Iron Property.

F. H. Clergue, head of the Sault Ste. Marie Pulp Company and of the Lake Superior Power Company, and who proposes to establish great smelting works at the Sault, appears to have interested other American capitalists in his latest project. This is to develop a mineral and pulp wood region in Michipicoten district, north of the eastern end of Lake Superior. He has acquired valuable hematite deposits there, of which the Helen mine is the chief, and is now pushing through a railway to strike that property and ultimately to reach to the Canadian Pacific Railway's main line at Missanabie. To build that road the Canadian Government contributes $3200 per mile and it is as good as settled that the Ontario Government will add the further subsidy of 2000 acres of land per mile in the mineral region traversed.

Londonderry Iron Company's Property Sold.

The entire assets of the Londonderry Iron Company were sold at the auction at Montreal on the 1st inst. for $153,000 cash to interests represented by H. S. Holt of Montreal. The amount is considered a very moderate one considering the present state and prospects of the iron market in Canada and the extent and character of the property. It represents everything owned by the company, whose capital was $1,000,000, of which $400,000 was preferred and $600,000 common stock. The directors of the company were Lord Mountstephen, Sir Charles Tennant of Glasgow, A. S. McClelland of Glasgow, J. J. Greenshields of London, England; A. T. Patterson, John Trumbull and R. McD. Patterson, the last three of Montreal.

More Iron Works for Sydney.

Some time ago it was stated in this correspondence that the Montreal Rolling Mills Company were showing considerable interest in the iron developments now taking place in Cape Breton, an interest which gave rise to the report that the company were entertaining the idea of moving there. In a special dispatch from Montreal to the Toronto *Mail and Empire* Mr. McMaster, the manager of the company, is reported to have said in an interview on the 1st inst. that his company were looking for a wider field of operations. He had visited Sydney and from a commercial point of view considered it a good town for the company to have works in. If the rate payers see fit to accede to the proposal made by his company all that remains, he says, is to carry out the scheme.

C. A. C. J.

Announcement is made that the American Hoist & Derrick Company, St. Paul, Minn., will engage in the manufacture of steel castings, using the Tropenas converter. The plant will be installed in the iron foundry, but next spring the building will be enlarged by the addition of 100 feet at the west end, thus practically making a new department for a steel foundry. The steel converter will be erected under the supervision of G. Champailler, a French engineer, who will be in St. Paul about January 1. It is expected that the company will begin to make steel castings about the middle of February. The converter used will have a capacity of 2 tons. At present steel castings are not made further west than Milwaukee.

The new British first class battle ship "Venerable" was launched at Chatham dock yard, England, on November 2. The "Venerable" is of 14,700 tons and 15,000 indicated horse-power. She is 400 feet long, has 75 feet beam and draws 26 feet 9 inches of water. She has two propellers and her estimated speed is 18 knots. She will carry a crew of 755 men, has two torpedo tubes and her armament will consist of four 12-inch guns, 12 6-inch quick firing guns, 18 12-pounders, 12 3-pounders and eight rapid fire guns.

The Foundrymen's Association.

The eighth annual meeting of the Foundrymen's Association was held at the Manufacturers' Club in Philadelphia on Wednesday, November 1, the president, P. D. Wanner, occupying the chair.

The Executive Committee reported as follows: "This is the eighth annual meeting of the association. The organization was formed October 20, 1891, at the Manufacturers' Club in this city. Under date July 25 of that year a circular letter was sent out calling the foundrymen of this city and vicinity together to form an association, the object of which should be to improve the condition of the foundry business, a business which at that time was not in a very prosperous shape, there seeming to be more than a sufficient number of foundries to supply the castings required in this market. In consequence of the existing state of affairs foundries, in order to keep their shops going, were quoting very low figures. Some of the foundries were unreasonable enough to take a large percentage of their work at prices below cost. To a great extent this course was due to ignorance of founders as to the proper way to get at the cost of castings. They appeared to be under the impression that it was necessary to quote lower figures than their neighbors in order to get business. The movement toward organzation was well supported and the meeting well attended. The situation was talked over and a permanent organization formed. An effort was made to establish a schedule of prices for castings and for labor, but it was subsequently found that such a proceeding was impossible and unadvisable, and the matter was dropped. The object of the association was a wide one, being to take up all matters of interest to the foundry trade and to publish discussions on the same. It is on the line laid down that the association is working to-day.

"Before the formation of the association there had been several attempts made in this city to get the foundrymen together, but none had succeeded. To day we find foundrymen's associations besides our own at Boston, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Dallas (Texas) and Montreal, Canada. In addition there has been formed the American Foundrymen's Association, an organization which meets once a year in different cities, and which has become very popular under the guidance of John A. Penton. Then there is the National Association of Foundrymen, commonly termed the "defense" association, and of which Mr. Penton is also secretary. The latter association has grown to much importance and could be described as one providing insurance against strikes. It already has a large capital and has settled a number of troubles existing between the owners of foundries and their molders to the entire satisfaction of all concerned.

"For the reason that all the associations mentioned have been formed since the Philadelphia one was established it is fair to claim that we had something to do with originating the idea from which foundrymen's associations have sprung. We do not say that these associations would not have been formed had it not been that we started the movement for them, but we certainly want credit for having organized the first successful association of foundrymen in America. We have also brought out some of the best speakers on subjects of general interest to foundrymen. And in addition we think we have brought about a better feeling between foundrymen, and in presenting opportunities for social intercourse have provided the means for adjusting many of the irregularities which existed in the trade. As a result of our many meetings it is a well-known fact that should an inquiry for prices of castings be made of several founders the quotations are all about the same figure, while before foundrymen understood one another there was always a wide difference in figures.

"The members of this association may congratulate themselves upon the fact that the association has been of much use to the foundry trade in general."

The reading of the report was followed by the nomination and election of officers to serve during the ensuing year. The following were elected:

President, Thomas I. Rankin of the Abram Cox Stove Company, Philadelphia.

Vice-President, James S. Stirling of the Harlan & Hollingsworth Company, Wilmington, Del.

Secretary, Howard Evans of the J. W. Paxson Company, Philadelphia.

Treasurer, Josiah Thompson of J. Thompson & Co., Philadelphia.

Executive Committee: Stanley G. Flagg, Jr., of Stanley G. Flagg & Co.; E. E. Brown of E. E. Brown & Co., John Glover of Glover Bros. and Wm. Hanson of the Pennsylvania Iron Works Company, all of Philadelphia.

The Crown Smelting Company, Chester, Pa., were elected to membership in the association.

The treasurer's report was put in and the same showed a balance of $1833.61 in hand and all bills paid.

Under the head of new business the question of form-

ing an inside organization to be known as a "Bureau of Information and Credits" was taken up and after some discussion, in which it was brought out that the proposed bureau would prevent members being imposed upon by concerns who had defaulted in their payments to other foundries and were seeking opportunities to run up new bills with different foundries, the matter was referred to the Executive Committee with instruction to that body to formulate a plan for the working of such a bureau and report at the next meeting of the association.

Another subject discussed was "The Use of the Sand Blast Compared with the Casting Brush." Opinions on this subject were pretty well divided in favor of both methods of cleaning castings. About the only disadvantage said to attend the use of the sand blast was that it did its work too well and exposed little imperfections in the faces of castings which, when a cleaning brush was used, were not disclosed.

The use of exhaust rumblers as a method of cleaning was advocated by some of the speakers in the discussion, and many places where they had been installed and were working satisfactorily were mentioned.

C. Von Gienauth of Eisenberg, Pfalz, Germany, was present at the meeting as a guest of the association. Mr. Gienauth represents a foundry establishment in Eisenberg employing a very large force of workmen and answered many questions in regard to the wages paid molders in his country, the amount of work they could do in a day and other matters.

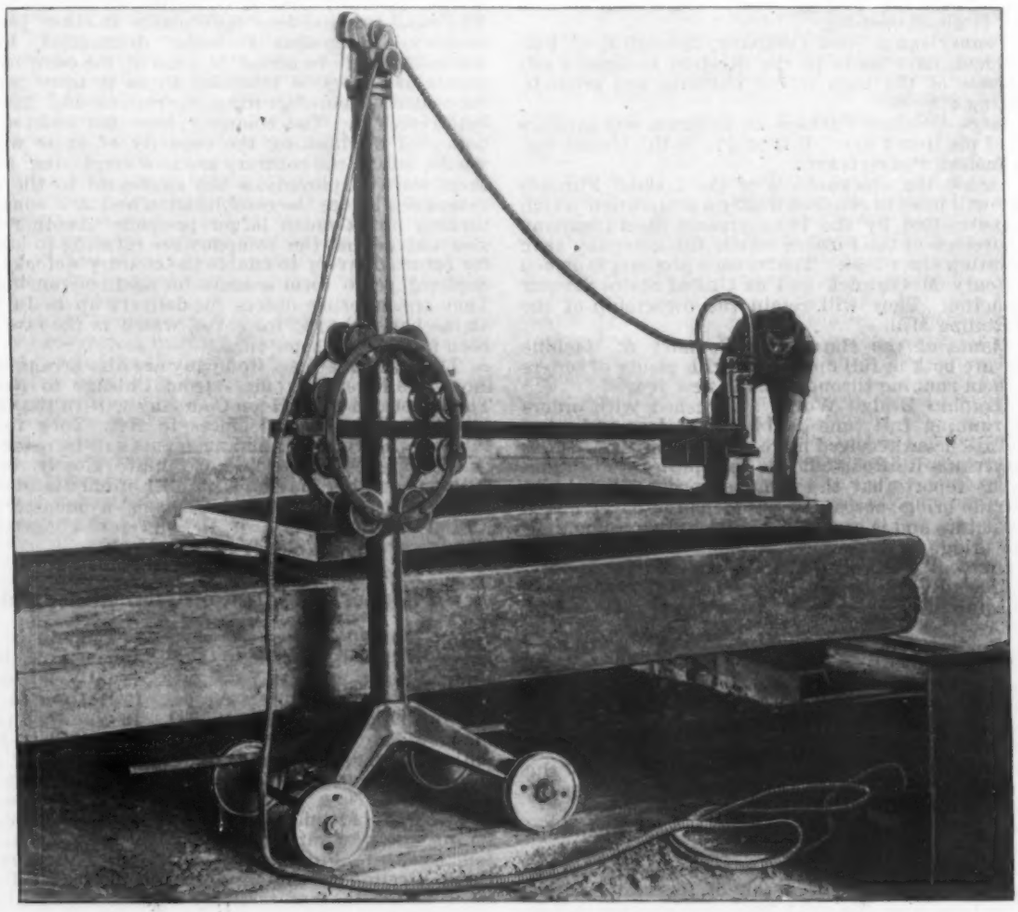
The American Pneumatic Armor Plate Scaling Machine.

The accompanying engraving represents one of three armor plate scaling machines installed at the Bethlehem Iron Company by the American Pneumatic Tool Company, 844 Washington street, New York. In a statement concerning the operation of these machines the Bethlehem Company say that they "have been found to replace from 15 to 20 men apiece and to do more satisfactory work than was done by men with hammers, chisels and picks. The scale on nickel steel armor plate is an oxide of iron which varies in thickness from 1-16 to ½ inch, according to the duration of exposure to heat and to the temperature of furnaces during such exposure. The tenacity of the scale is not only increased by increasing duration of exposure to heat and the temperature of such exposure but by the nickel contained in this high grade steel, and after an armor plate is kept constantly at white heat for 25 days the scale is very difficult to remove by ordinary methods. The time necessary for the American Pneumatic Tool Company's scaler to clean 100 square feet of armor plate, in comparison with time needed for men with hammers, chisels and picks, may be set down as follows:"

	Scaling Machine.	Ordinary Labor.
For scale 1/16 inch thick...	8 hours, or ⅜ day of 10 hours.	120 hours, or 12 days of 10 hours.
For scale ⅛ inch thick.....	20 hours, or 2 days of 10 hours.	400 hours, or 40 days of 10 hours.

Placed upon a base mounted on wheels is a column of pipe in which is suspended a counter balancing lead weight. The cables attached to this weight run over sheaves at the top, which are mounted on a revolving ball bearing cap. These cables are connected at their outer ends with a circular slide, the four wheels of which serve as the guides up and down the machine. On this slide are four sets of additional wheels, between which a double carrier bar plays back and forth. To one end of this carrier bar there is attached an adjustable bracket, into which is inserted the reciprocating hammer. This hammer strikes with great rapidity upon a cutting tool or bit of the required form, which is loosely inserted in the nose of the hammer cylinder. Because the force is subdivided into so many blows the edge of the cutting bits is never burred. All dullness results from actual wear of the metal from work done. The machine has three important motions. It is raised or lowered to any required hight. The carrier bars slide back and forth to nearly their length, and the slide bearing the carrier bars and operating hammer can be swung around the column at pleasure. The machine as a whole is portable and can be worked anywhere. The power is compressed air, supplied through a wire incased hose at a pressure of 80 pounds and exhausted under the cutting bit to blow away the cut particles. The windlass on which the cable in wound is of course used to assist in the adjustment of the machine, especially when the bit has been somewhat reduced in length by wear. The cross chisel and bush hammer are the bits most commonly used in scaling armor plate.

Ordinarily the workman stands on the ground by the machine, and with a hand on the carrier bar, by virtue



THE AMERICAN PNEUMATIC ARMOR PLATE SCALING MACHINE.

of the counter balance, is able to play the machine anywhere on the surface where work is to be done. In working the middle of a large armor plate the workman mounts on the plate and handles the machine as is most convenient for him.

Central Pennsylvania News.

HARRISBURG, November 6, 1899.—The Harrisburg Pipe Bending Company have developed a large business, and the products of their plant go to all parts of the world. They are manufacturers of iron, brass and copper coils, feed water heaters and high pressure cylinders. The business during the year just closed has been an exceptionally good one, although most of the orders had been contracted for before the rise in prices. Business in the brass, copper and heater department is exceedingly brisk at present although the prices of the finished product are not in proportion to the increase on raw materials. The company's output of carbonic acid gas cylinders was more than double their best previous year. The season for iron coil work is about opening.

The Pennsylvania Steel Company, through E. C. Fulton, president, have made to the Steelton borough a gift in the shape of the high school building and grounds, representing $125 000.

The large Coleman Furnace at Lebanon will produce 300 tons of pig iron a day. It is said to be the largest furnace in Eastern Pennsylvania.

Next week the stockholders of the Lochiel Furnace Company will meet to consider finally a proposition which has been submitted by the Pennsylvania Steel Company for the purchase of the furnace which the company have been operating since 1895. The furnace property is owned by Col Henry McCormick and ex United States Senator J. D. Cameron. They will retain the ownership of the Lochiel Rolling Mill.

The plants of the Harrisburg Foundry & Machine Company are both in full operation, with plenty of orders to keep them running throughout the new year.

The Dauphin Bridge Works are rushed with orders and are running full time double turn. Iron and other materials are being received more regularly.

Pennsylvania Railroad officials here profess to be ignorant of the report that the company propose to rebuild the Rockville bridge across the Susquehanna River. It is an old structure and is crossed by more heavy trains than any other bridge in the country.

The charcoal forge at Lucknow, which is being operated by James B Bailey, is turning out about 500 tons of charcoal scrap blooms a month. Another furnace will be put in blast this week and the forge capacity will be doubled. An order for $40.000 worth of blooms was placed in New York last week, and the inquiries come from all directions.

The Central Iron & Steel Company are running full in every department. The output is very large. It is a fact, however, that many enterprises have been halted by reason of the high prices of materials, and an officer of the Central expressed the opinion that it would be better for all concerned if the prices were more nearly normal.

There has been a marked falling off in the demand for muck bars which were selling not long ago for $40 a ton. They were offered at Lebanon a few days ago for $31 50. There has been no demand to speak of for two months. About the time that the price was soaring every mill in the country began making muck bars, and the ivy vines were torn off the antique piles to resume the making of muck bars at $40 a ton. But the dream was soon dispelled. When everybody was engaged in the production of muck bars the competition was bound to become close and the price fell. The last sale of 500 tons at Lucknow forge was at $32.50.

The contract for building the proposed new wheel pit of the Niagara Falls Power Company has been awarded to the National Contracting Company of New York. This wheel pit will be known as No 2 and it will be built on the east side of the inlet canal—that is, opposite the present wheel pit. In length the wheel pit will be over 400 feet. It will be 180 feet deep and 20 feet wide. A power station very similar to the present station will be erected over the pit and the initial installation of machines will include six 5000 horse-power turbines and the same number of dynamos. Bids for the new dynamos and turbines have not yet been called for. It is expected that work will commence at once and that it will be completed in the spring of 1901. The expenditure on the wheel pit will be nearly $1 000 000. The contract will afford employment to a large number of men. The president of the National Contracting Company is Gen. Francis V. Greene, who is also president of the Barber Asphalt Company. The superintendent of the company is Col. William Young, who, like General Greene, is a West Point graduate. George B. Burbank, who was connected with the work on the original tunnel and wheel pit, is also connected with the National Contracting Company as consulting engineer. The total capacity of the wheel pit will be 50 000 horse power, which, added to the present 50.000 horse-power, will make the total output of the plant 100 000 horse power.

Large Interests Removing from Chicago to New York.

The American Tin Plate Company, for business reasons, are making arrangements to remove their general offices from Chicago to New York. It is expected that this will be accomplished within a few weeks and suitable quarters are now being selected. The headquarters of the operating department will be established at Pittsburgh. Some erroneous statements have recently obtained circulation which call for correction. The Star and Monongahela plants at Pittsburgh are not to be dismantled, but are to be overhauled and improved so as to bring the equipment up to the standard of the company's works generally and thus secure an increased output. The small two and four mill plants in other parts of the country are gradually being dismantled, but their machinery will be added to some of the company's large plants at favorable locations, so as to more thoroughly concentrate manufacturing operations and thus secure better results. The company have not entered upon a policy of diminishing the capacity of their works as a whole, but on the contrary are now employing more men than were employed in the aggregate by the different companies before the consolidation and are consequently turning out a much larger product. Another report is also untrue that the company are refusing to take orders for future delivery to enable the country's stocks to be so depleted as to form a basis for again advancing prices. They are entering orders for delivery up to July 1 next on the basis of $4.65 for cokes, which is the rate that has been in force for some time.

The National Steel Company are also arranging to remove their general offices from Chicago to New York. The American Steel Hoop Company will in the same way establish their general offices in New York instead of Pittsburgh as early as arrangements can be made.

These three companies are quite closely connected with one another, having a number of officers in common. Judge Wm. H. Moore of Chicago, a member of the Executive Committees of the different companies will also remove his residence to New York.

Higher Freights on Iron and Steel.

The annual meeting of the special Committee on New Iron and Steel Rails held at the headquarters of the Trunk Line Association New York City, recently, advanced the Chicago-New York basis on new rails from $4 to $4.70 per ton, effective January 1, 1900. In line with this basis the new rate from Chicago to Boston will be $5 30 per ton; to Philadelphia and Baltimore, $4.30 per ton; to Pittsburgh, Buffalo and Wheeling, $2.80 per ton. From Bessemer to New York the rate will be $2.80; to Boston, $3.40; to Philadelphia, $2.40; to Baltimore, $2 30. From Lorain the new rate will be $3.20 to New York; to Boston, $3.80; to Philadelphia, $2.80; to Baltimore, $2.70. From Steelton, Scranton, Danville, Sparrow's Point and other points in that territory the rates will advance to the basis of $4.30 from those points to Chicago.

The Steel Rail Committee organized at the New York meeting by re electing Division Freight Agent S. L. Seymour of the Pennsylvania Railroad, Pittsburgh, chairman, and General Agent S P. Woodside of the Erie, Pittsburgh, secretary. The committee has a province of its own in regulating railway traffic. It has practically all the roads of the Central Freight Association and the Trunk Line Association represented in its personnel. The general committee has sub committees as follows: Bessemer, Chicago Eastern Pennsylvania and Maryland, Johnstown Lorain and Wheatland.

The advanced pig iron and billet rates to go in the first of next year will be on bases as follows: Pig iron, Chicago to Pittsburgh, $2.90 per ton, and Pittsburgh to Chicago, $2.70; mill cinder, Chicago to Pittsburgh, $2 50, and Pittsburgh to Chicago, $2.50 per ton; billets, blooms and bor ings, crop ends, ingots, muck or puddle bars, old car wheels and axles, old rails, scrap iron scrap steel and scrap tin, $3 per gross ton Pittsburgh to Chicago and Chicago to Pittsburgh; cast iron pipe, $3 per net ton Pittsburgh to Chicago and Chicago to Pittsburgh; chain iron, pipe iron or pipe steel in lengths of 12 feet or more, to be used in the manufacture of pipe, sheet bars, tin plate bars, wire rods and ingot molds, $3 per gross ton Pittsburgh to Chicago and Chicago to Pittsburgh. The pig iron rate Chicago to New York, is to be $4.70 per ton, and $4.50 New York to Chicago. The bases on the other commodities, Chicago to New York and New York to Chicago, are to be $5 per net or gross ton, as the case may be.

American and European Export Methods.*

BY W. C. BARKER, NEW YORK.

I will compare the methods employed by manufacturers in Europe and the United States, pointing out the good, criticising the bad in both, and if I say anything that is not very complimentary to either class I ask them to pardon me, as I do it believing that it will only be necessary to bring the defects to their notice for them to profit by it.

In using the term "European" I mean it to apply to all Transatlantic countries, but as England and Germany are the two most prominent exporting countries we will use their institutions and methods as models for comparison.

Education.

As education is the fountain head of all commercial growth it is the most important subject to consider. In Europe there are several schools specially equipped for educating young men as foreign commercial travelers, where language, commercial law, international law, commercial treaties, tariffs of different countries and all other subjects that tend to fit the student for his calling are taught. We find sons and other relatives of the members of manufacturing firms as students in these schools. The tariff laws of different countries are subjects of special study, so that young men fitting themselves for commercial life in any country can learn all about the tariff laws of that country as applied to the class of goods they are to sell. The value of these schools cannot be estimated in money. I think they have contributed more toward the commercial success of European manufacturers than any other one thing.

What are we Americans doing in the way of schools for training our young men for commercial life in foreign countries? It is true that sons of rich men can go to college and learn languages as taught there—that is, to read and write, general composition; but I do not know of a school or college where a young man who wishes to fit himself for a commercial traveler in any foreign country can learn the commercial language of that country. I regret to say that as a rule the sons of our manufacturers care more for baseball, golf, rowing and other athletic sports than they do about international law or commercial languages. If an American firm want a commercial traveler are they able to find an American who can speak the German, French or Spanish languages who is competent to do it? They may, but they are very scarce. I know of a firm who recently advertised for a traveler for Europe. They stipulated that applicants must be able to speak and write German and French. They received several hundred applications, but not 1 per cent. of them were American born citizens.

The question is often asked, Which is to be preferred, a man who speaks the language, knows the customers the customs of the country, but does not understand American ways of doing business or the possibilities of American goods, or of the manufacturers to supply goods to meet all requirements; or an American who thoroughly understands the goods he is to sell, their possibilities American ways of doing business and is imbued with American ideas and enterprise, but who is not able to speak the language and does not know the customs of the people? Having tried both in connection with the sale of agricultural machinery, I will take the latter every time.

I know a man who represented a manufacturer of harvesting machines in Europe. He could not speak anything but the English language. A trial of different makes of machines was to be held. All the other representatives were foreign born and spoke the language, but their machines were of American manufacture and did not understand their language. My friend, being an American, and his machine being of American manufacture, understood each other so well that the judges employed a talking machine to tell him that he had won the first prize, and the principal dealer employed the same talking machine to secure the agency.

The American commercial traveler has no equal in any country; his enterprise, hustle and acuteness are proverbial; he possesses a species of "contagious enthusiasm," and has the faculty of inoculating all with whom he comes in contact with this enthusiasm for American goods. The American commercial traveler is at a great disadvantage by reason of not having the proper commercial education, but we are fast realizing the advantage of travelers having such an education, and I predict that in the very near future such schools will be established and equipped with the best teachers and apparatus the world can supply. Give American commercial travelers the advantages of such an education and our European cousins will have to look closely to their laurels or the United States will soon become the center of the world's commerce.

Business Methods.

There is a marked difference in the methods of obtaining and conducting foreign trade. A German manufacturer sends his representative to a foreign country to learn what kind of goods are sold, to obtain samples for him to copy and to take orders for imitations at prices lower than those asked for the originals. He then imitates them, even to the original manufacturer's name, trade-mark or patent number. To sell such goods at a low price he must reduce his workmen to the lowest place of wage earning. This course does not benefit the dealer or consumer, for an "imitation" is never better than its "original."

An English manufacturer insists that his machinery or goods is just what is wanted; he will not entertain the thought that they can or should be modified to meet the requirements. He argues that having manufactured them in their present forms for so many years they must surely be perfect.

Neither of these methods stimulates inventive genius or the development of new ideas.

An American manufacturer sends his representatives to study the requirements of the trade in his line, and report carefully all conditions of labor, power used, &c., then he makes such modifications in his goods or machinery as will meet those requirements. I say "modifications." An American manufacturer seldom changes the mechanical principles of his goods. As a rule it is not necessary, as we have within the limits of these United States every kind of soil, grow nearly every kind of grain and crop, have nearly every class of labor and climate to contend with that can be found in the world, and our manufacturers have adapted their products to meet all these varied demands. This being the case it is only necessary for them to know the requirements of a market to supply them. They will not make antiquated articles, neither will they make imitations. They give the dealer something new and better, put into the hands of the user an article that will enable him to earn more money, live better and be a better man or woman. For such an article the user will pay a better price and the manufacturer can pay better wages for producing it. Thus the dealer, user and producer are all benefited.

In the office of the European manufacturer you will find South American, Mexican, Australian and American departments; in each of these are men who have a thorough knowledge of the requirements of people of the markets they look after, speaking and writing the languages the same.

All foreign countries are alike to a majority of the American manufacturers and only the English language is spoken; there are exceptions to this, however. We find a few manufacturers, each making some special class of goods, forming a co-operative organization, maintaining offices in New York, employing competent men who have made a life study of the export trade, where the languages and all other details of the trade are known and a thorough and efficient organization maintained, and who send travelers to the far corners of the world, thus enabling a dealer to obtain a complete line of goods direct from the maker, yet all through one channel.

Agencies.

The European manufacturer establishes a branch house and sends out some one from the home markets to manage it, sells his goods direct to the small merchant or consumer, thus ignoring the importer, or he sends his goods on consignment to an agent, fixes his price for the consumer, pays his agent a small commission and takes the profit.

An American seeks out the importers in the various markets, sells them his goods at a fixed price, leaves them free to sell to the merchant or consumer and make their profit. I think those of our friends who are importers who are here will have noticed this difference and appreciate it. A European manufacturer, as a rule is also a merchant and banker. As a merchant he sells to the consumer; as a banker he supplies "credit." The American manufacturer devotes his entire time and energies to the production of his goods, leaving the trade of the merchant and consumer to the importer and the supply of credit to the banker.

Factory Methods.

In Europe a manufacturer will make a large assortment of different classes of goods, thus necessitating the frequent shifting of their men from one class of work to another. As the result they are not experts in any one class of work. The American manufacturers confine themselves to one specialty or class of goods, the men working at the same machines or on some parts continuously, thus becoming experts in that particular thing, and being paid by piece work develop special tools for their work, premiums often being offered by the proprietors for new ideas or tools for this purpose.

* Read before the International Commercial Congress at Philadelphia.

The European manufacturer of machinery builds on the theory, "weight indicates strength." The American manufacturers say, "weight does not indicate strength"—therefore the reason of the great difference in weight between the European and American machines. As, for instance, a European agricultural engine developing 20 horse, actual power, will weigh about 20,000 pounds; an American of same power about 13,000 pounds. A European mower weighs about 1,000 pounds; an American of same width of cut weighs 750 pounds. As transportation and duty are based on weight this additional weight is an expensive matter for the importer, to say nothing of the saving in motive power for moving them from place to place.

The European manufacturers say, "time is of no value." They sacrifice "time" to save outlay in new and improved methods, they employ old machines, tools and methods, speed their machines to suit the movements of poorly paid workmen. The American manufacturers say, "time is money." They spend money to save time, they employ the last and most improved machines, tools and implements, they speed their machines so as to turn off the greatest possible amount of work and employ the best men money can buy to operate them.

Governor Stone in his address of welcome said, "Our manufacturers economize labor." I want to emphasize that point and say that they also economize "time."

I once had the pleasure of visiting a large manufacturing establishment in Europe, where they made nearly every article known in the line of agricultural machinery. I was interested and desired to go through their works. At first the general manager was rather doubtful as to the propriety of permitting me to do so, but when I assured him that I would give him the benefit of suggestions as to how we did things in the United States the manager concluded that possibly he might get some ideas from me that would be as valuable to him as what I might see would be to me, so we started on the rounds of the shops. We entered the wood working shop. There I saw them using the old single spindle boring machine and the single chisel mortiser, boring one hole and cutting one side of a mortise at a time. The manager was greatly surprised to learn that American manufacturers used gang boring machines, boring all parallel holes through a piece at one movement, and gang mortisers cutting all parallel mortises at one stroke. In the forge room I found them using rope and pulley attached to a drop hammer running in upright guides, worked by hauling the hammer up by hand and allowing it to fall; this was their trip hammer—it was a "tripper" in earnest. When I referred to our power hammers striking 100 to 150 blows per minute, with power equal to 1000 to 2000 pounds per stroke, the manager could hardly believe it.

I saw a man working at a machine and I had to look twice to see if either the man or machine was in motion. I inquired why they did not speed the machine up and have it turn off more work. His reply was that the machine was set to suit the speed of the man, and when told that in American shops the machines were run to their highest efficient speed, and if a man could not or would not speed his movements to correspond another was put in his place who would, his reply was that their workmen would not do so.

When asked his opinion as to the reasons European manufacturers adhered to the old ways and principles while Americans adopted new ones he said, "The European manufacturers have inherited their ideas from their ancestors, their workmen had done the same and they could not change them now, while the ancestors of you 'Americans,' when they landed with William Penn on American soil, found themselves surrounded with new conditions that required new methods of thought and action to meet; so every one set himself to thinking in his own way along different lines to provide the means and methods to meet these new requirements. They accomplished it, and their descendants have each kept on thinking out new ways and methods of doing things ever since. As a result they have become 'a nation of inventors and mechanics.'"

What are the results of these different methods? I will not tire you with statistics beyond stating that in 1890 we exported $151,102,376 worth of manufactured goods. In 1899 we exported $338,667,794 worth of manufactured goods, an increase in nine years of $187,505,418.

Correspondence.

As nearly 75 per cent. of the international trade is done through correspondence I take the liberty of calling attention to a few points relating to same. American manufacturers want full details of the requirements of their correspondents. As I have before stated, when these are known they are able to give what is wanted. When writing give name in full (printed if possible), also address, stating whether dealer or farmer. If the subject inquired about is not of sufficient importance to write on a sheet of paper with name and address printed thereon and to send under seal then save your postage and do not write at all.

If you have not had previous correspondence with the manufacturer making the article inquired about then take pains to state clearly the following facts:

1. The class of business you do and the goods you handle.
2. What the requirements are which you wish to meet with the article inquired about.
3. Give your references or say that if business results satisfactorily references will be given.

These three features clearly and fully stated will do more toward inspiring confidence in the writer than promises of large orders.

Labor Conditions.

In Europe the laborer is taught that his Government will provide for him in old age, so he has no care for the morrow. In America the laborer knows that he must provide for his own future and does it. In Europe capital rules labor. In the United States labor rules capital. In Europe Governments enact laws compelling employers to deduct a certain amount from wages earned by their employees for the Government insurance fund for their employees, thus taking away all incentive to provide for themselves. In America our workmen organize building and loan associations and savings banks of their own. By this means they soon own their own homes and lay by a competency for the future. Home builders and savings bank depositors are seldom found in the ranks of strikers or of labor agitators. In Europe workmen as a class are poorly paid, poorly educated and have but limited voting power. In America we have manufacturing establishments that maintain free libraries, lecture rooms, free hospitals, and the workmen have their societies and organizations, officered and controlled by those chosen from their own ranks, and their vote has the same power as that of the capitalist.

Railway Development and Cost of Traffic.

I think the railroads of this country have done as much as any other one thing to increase the international trade of this country. The cost of transportation per ton in the United States is only about one-fourth of what it is in some of the European countries. In Germany it is nearer to our cost than in any other, yet the cost in the United States is 33⅓ per cent. less than in Germany. Our railroads have no support from Government, and in most cases pay dividends on investments. European railways are in most cases either directly owned or supported by their Governments or enjoy large subsidies. I predict that the time is not far distant when the merchant marine of this country engaged in international trade will occupy the same relative position on the high seas that our railways do on land with other nations, both in tonnage and cost of transportion.

Peru as a Producer of Copper.

In commenting on the production of copper in Peru the *Bulletin* of the Bureau of American Republics says:

The stoppage of the free coinage of silver two years ago was depressive to the silver mining industry and a number of mines are closed down. In 1898, for the first time in the history of the Cerro de Pasco mine, which had been worked solely for silver, as an experiment some copper ores were shipped to England when the price for pure copper was £52 per ton. The sales proved so satisfactory that a number of men were employed, and before the end of the year from 50 to 60 miners were engaged in the exportation of copper ores. At present the output is about 3000 tons per month, two-thirds of which is being piled up at Cerro de Pasco for want of means of transportation, as barely 1000 tons per month find their way to the railway terminus at Oroya, and on these the average charge is about £8 per ton. From Oroya these ores are carried to Callao, on the coast, by rail for £1 10s. per ton, and are finally shipped to Liverpool or Swansea with the freight and general charge on them of about £3 per ton. All ores now being worked are of the richest grade, ranging from 35 to upward of 40 per cent., obtaining in Liverpool an average price of £25 per ton. The construction of the railway from Oroya to Cerro de Pasco will develop the copper industry to a great extent, reducing the present expenses of £14 on each ton of ore sent to Liverpool to £7 or perhaps less.

It is estimated that the quantity of ore which may be said to be in sight is from 5,000,000 to 6,000,000 tons. Notwithstanding the primitive methods of working the cost of production does not exceed from 6 to 8 English shillings per ton.

The Boston Gear Works announce that on or before December 1 they shall occupy their new premises at the corner of Purchase and Pearl streets.

The Iron Age

New York, Thursday, November 9, 1899.

DAVID WILLIAMS COMPANY, - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - BUSINESS MANAGER.

A Peculiar Situation in Chicago Building Trade.

Building operations in Chicago are seriously restricted by unsatisfactory union labor regulations. It is remarkable that in a time of general prosperity, with building improvements actively proceeding all over the West, the leading Western city should report dullness in this line. Usually it is in the forefront with all sorts of enterprises when conditions are propitious. The population is growing and a demand for more houses is felt in all sections of the city. But only a limited amount of building is being done, which is actually below the record of panic times. An attempt has been made to ascribe the dullness to the high price of building materials, which probably does exert some influence, but as high prices never before so seriously checked building operations, even when much higher than now, the cause has been sought in other directions, and the exactions of union labor are declared by builders, contractors, architects and real estate operators to be at the root of the trouble.

The city of Chicago has long been noted for the strength of the labor organizations in the building trades. The eight hour day in that city is now a time honored institution with masons, bricklayers, carpenters, plumbers, fitters and on down to the end of the line. Contractors and builders have so long been accustomed to the short working day that they have adjusted themselves to it as a permanence and would probably not think of making a contest for a return to longer hours as a single subject of dispute. But they are now confronted with much more radical measures in the same line which open startling possibilities as well as establish present hardships on those who bear the cost of constructing buildings.

The workingmen are not satisfied with their success in establishing an eight hour day. In one trade after another they are making rules limiting the amount of work that a member of the union shall be permitted to do in his so-called working hours. A journeyman plumber can only wipe a certain number of joints, a steam fitter can only connect a certain number of radiators, a gas fitter can only lay so many feet of pipe, a lather can only nail so many bundles of laths, and thus throughout the entire list, regardless of the fact that the limit thus established may be only half or two-thirds of what an average workman can easily do in eight hours; but the full day's wages must be paid for this fractional day's work.

The theory upon which this limiting of a day's work is based is the same as that upon which the old ten-hour day was cut down to eight hours—namely, that a greater number of men will be given employment if each man does less work. This limit of work had not been contemplated when the working day was shortened to eight hours. It is a modern development of what may be termed union progress and is an evidence of the great confidence which labor leaders have in their ability to enforce almost any regulations they choose to adopt. The possibilities in this direction are most inspiriting to a labor leader. If the limitation of the work to be done in a day can be established as a permanent principle the mere quantity to be done is an elastic expression, having a flexibility to suit the particular job in hand or the special builder. Why should a journeyman plumber wipe more than half the joints he is now permitted to do by the union regulations if the man who pays the bills has to submit? Why should a hodcarrier tote more than eight hods of mortar or brick in a day, which would be one an hour, if his union says so and no man can force him to do more? These regulations are enforced in addition to a general advance in wages made at the beginning of the present building season, with another advance probably to be insisted upon before the next season opens. The cost of building has thus been heavily increased.

The situation is considered so grave by Chicago building interests that an earnest attempt will undoubtedly be made before next spring to bring about a change. Capitalists who would like to build are discouraged, but contractors, builders and other employers of labor in the building trade are exasperated and ready to resort to aggressive measures to bring labor cost within reasonable limits. Even the Real Estate Board of the city, which is a highly respected and influential organization, has taken up the matter as one that affects the welfare and prosperity of Chicago and instructed a committtee to investigate it and see what can be done. As usual, when an attempt is made to grasp too much the labor unions have failed in their attempt to give more men employment, because the high cost of building thus brought about has heavily curtailed building operations. They are being taught the lesson, if they would but heed it, that a man must be just toward all men if he would be generous to his own people. It is to be hoped that the various interests whose prosperity depends upon the building trade may effect a peaceable reform in these labor restrictions. If that is not done it is likely that Chicago building operations will be still more seriously checked next year.

Molding Machines and Union Labor.

The wrong sort of credit seems to have been given to President Martin Fox of the Iron Molders' Union of North America for his recent advice to his members not to oppose the use of molding machines. In acknowledging that an error had been committed by union molders refusing to use them, and recommending that they should hereafter cheerfully work with such machines, it appears that he was not to any great extent imbued with the spirit of progress and ready to recognize that foundry methods had been improved. From developments which have since occurred in Western foundries it would appear that his purpose was to bring the operation of molding machines under the control of the union, so that their competition with hand molding could be minimized. Disputes are now awaiting settlement in which this question has acquired considerable importance. Manufacturers who have introduced molding machines in their foundries with satisfactory results as to increased output and reduced cost are certainly loath to give up these advantages. But they will practically give them up if they accept the regulations governing such machines which the unions seek to impose.

A rural journal remarks that the formation of the proposed consolidation of bridge manufacturers will cause considerable grief among county officials. It has been the custom in many parts of the country for such officials to exact tribute for their private benefit from bridge builders who wished to secure contracts for country road bridges. The abrogation of this custom, however, can hardly be expected to cut much of a figure as a possible saving in future manufacturing operations. The

bridge builders who made such gifts to county officials very probably got the money back in some way. The taxpayers are usually the sufferers in such operations.

Some Notes of Experience with Rails.

The *Railroad Gazette* reports that in 1896 the Northern Pacific Railway Company bought about 103 tons of basic open hearth steel rails. These were rolled by the Carnegie Company to the 66-pound section of the Northern Pacific. The only object of the company in trying open hearth rails was to be able to get very low phosphorus, which, it will be observed, is as small as 0.03 per cent. These rails were laid on a mountain grade near Helena. A runaway engine damaged a number of them so much that they were taken out of the track, but the remainder have been tried in 10 degree curves adjacent to low carbon rails in the same track. The analyses of these rails, both the open hearth and the low carbon, are as below:

	Open hearth.	Low carbon.
Carbon	0.65 to 0.75	0.35
Silicon	0.10 to 0.16	0.72
Phosphorus	0.03	0.109
Sulphur	0.05	0.077
Manganese	0.65	1.04

After a year's service these rails were taken up and weighed to determine the loss. In the high carbon steel (open hearth) the loss in weight was from 8 to 10 pounds per rail. In the low carbon rails it was from 19 to 20 pounds. As a result of this, and of other observations more or less similar in character, Mr. McHenry concludes that there is no reasonable doubt that the high carbon greatly reduces the loss of weight. No reweighing has been made since the first one, the result of which is given above, but that will probably be done now very shortly.

The company are now using a 72-pound rail, the chemical specifications of which are as follows:

	Per cent.
Carbon, from	0.50 to 0.60
Phosphorus, not to exceed	0.80
Silicon, not below	0.10
Manganese, not to exceed	1.00
Sulphur, not to exceed	0.05

The old 56-pound section in the main line of the Northern Pacific, which was laid between 1880 and 1883, developed extraordinary wearing qualities. Mr. McHenry had analyses made of rails supplied by the Buffalo Iron Company in 1882 with the following result:

	Sample 3. Per cent.	Sample 4. Per cent.
Silicon	0.084	0.084
Sulphur	0.100	0.112
Phosphorus	0.108	0.109
Manganese	1.03	1.00
Carbon	0.48	0.50

It will be seen that these old rails are higher in carbon than the rail, the wear of which is compared above with that of the open hearth rail, but lower in carbon than the company's standard specifications. It is also lower in silicon and higher in sulphur and in phosphorus, yet it is believed that the percentage of broken rails in the track laid with these old 56-pound rails compares very favorably with track laid with modern rails, notwithstanding the very severe climatic conditions. These experiences tend to confirm Mr. McHenry in the belief, which is shared by a great many other good engineers, that while the chemical composition is very important, yet differences in heats and in the method of working have more to do with the quality of the finished product than the chemistry. He thinks, further, that if the railroad companies can pay something more than the lowest market price in order to get improved quality they will get more satisfactory results than they would by increasing the weight of the section.

The Philadelphia Steel Company.—The Philadelphia Steel Company have been organized under the laws of New Jersey, with a capital stock of 20,000 shares, $10 par, of 7 per cent. cumulative preferred stock and 30,000 shares, $10 par, of common stock. The company have offered for subscription 20,000 shares of preferred stock with a bonus of one share of common for two of preferred, the first call accompanying the subscription being $2.50 per share. The company have been organized for manufacturing crucible and open hearth steel for the manufacture of tools, shears, dies, cutlery, files, saws, springs, projectiles, etc. The prospectus states that a plant in Eastern Pennsylvania on the lines of both the Pennsylvania and Reading railroads has been acquired, but does not reveal its name or exact location. The president is Aaron J. Sanson, Jr., the vice-president is S. M. Shelly and the treasurer Edward M. Middleton & Co., iron merchants, all of Philadelphia, the offices being in the Franklin Building.

PERSONAL.

E. A. S. Clarke, at present general manager of the Illinois Steel Company, Chicago, will sever his connection with that company on the 15th inst., having engaged with the Deering Harvester Company of the same city. Mr. Clarke will make a European tour of two or three months before actively entering upon his new duties. He will have charge of the manufacuring details of the Deering Company. His successor as general manager of the Illinois Steel Company is T. W. Robinson, who at present is general superintendent of the Joliet works, a position which he has held since May 1, when he resigned from his long connection with the Colorado Fuel & Iron Company at Pueblo.

Gerald Haunay, who was well known in the hardware and jobbing trade as secretary of the American Axe & Tool Company, is now treasurer and manager of the Oscar Barnett Foundry Company of Newark, N. J. The latter company are successors to the Estate of Oscar Barnett, Mr. Haunay having purchased the interest of the estate. The business has been established for 54 years. The new company are incorporated under New Jersey laws.

John W. Gates, chairman of the American Steel & Wire Company, has been tendered the presidency of the Kansas City, Pittsburgh & Gulf Railroad. It is understood that Mr. Gates will not accept.

Charles A. Moore has been elected a director of the Liberty National Bank of New York.

Edward Shearson, formerly auditor of the Federal Steel Company, has been appointed assistant to the president of the company.

Floyd K. Smith, formerly assistant manager of the Sharon Iron Company, Sharon, Pa., has associated himself as vice-president with the New York & Pennsylvania Company, who contral a number of municipal plants in different parts of the country. His headquarters are at 26 Broadway.

Thomas Cosgrove, superintendent of labor and transportation at the Edgar Thomson Steel Works, at Bessemer, was seriously injured last week.

Dr. Edwin J. Houston of Philadelphia, Ralph W. Pope of New York, John Fritz of Bethlehem, Pa., Dr. Coleman Sellers of Philadelphia, Dr. Robert H. Thurston of Ithaca, N. Y.; Abram S. Hewitt of New York, and C. Kirchhoff of New York, have been elected honorary members of the Franklin Institute of Philadelphia.

W. H. Coleman of McKeesport, Pa., and Lewis Horner of Pittsburgh, chemists at the Homestead Steel Works, and William Thompson of the Bethlehem Steel Works, have been appointed by the Navy Department as Government steel inspectors.

D. B. Clark, recently manager of the car shops of the H. C. Frick Coke Company, at Everson, Pa., has accepted the management of the Schoen Pressed Steel Car Works, at Ellwood City, Pa. Mr. Clark is succeeded as manager at Everson by J. F. Keighley of Philadelphia.

J. W. Miller, who has been in Europe for some time past in the interest of the Uehling iron casting machine, has returned to this country.

Henry C. Frick of Pittsburgh has agreed to give $25,000 for a library building at Wooster, Ohio. Mr. Frick's parents live at Wooster.

H. O. Evans, recently connected with the Worthington Pump Company in an official capacity, and formerly connected with the Stanley G. Flagg Company of Philadelphia and the Crane Company of Chicago, has been appointed superintendent of the malleable iron department of the Sterlingworth Railway Supply Company of Easton Pa., succeeding H. C. Duggan, resigned.

George C. Davis of Philadelphia has accepted a position with the Sterlingworth Railway Supply Company of Easton, Pa., as metallurgist. Mr. Davis was connected with Thos. Devlin & Co. of Philadelphia, and has become quite well known in the malleable iron world through his able articles on the early history of this product.

W. D. Crawford, for many years connected with the Shoenberger Steel Company of Pittsburgh, is to be the general manager of the Tidewater Steel Company, recently formed to operate the old Wellman plant at Chester, Pa.

Alson A. Button has been appointed superintendent of the Crescent plant of the American Tin Plate Company at Cleveland, Ohio.

Lake Iron Ore Matters.

DULUTH, November 4, 1899.—The drop of lake rates this week to $1.50 will increase season's shipments 500,000 tons at the least calculation, perhaps more. It is now safe to put the season total at 16,500,000 tons at least. There is more inquiry for ore tonnage this week than there has been for two months and a lot of ore that was not to go forward is now placed for immediate shipments. This correspondence has insisted ever since rates reached $1.75 on their upward movement that they would fall later in the season and that the usual fall rise would be reversed this year. It is now safe to say that the $1.50 rate is higher than what will prevail later in November.

Reports have not been received for the October shipments off all ranges, but the Minnesota record to the close of the month is: Mesaba range, 5,500,000 tons; Vermillion range, 1,580,000; total, 7,080,000, against 5,880 000 for the full season last year. This is 1,200,000 tons better than Minnesota sent all last year and there will be a very good November to hear from. Last year Minnesota shipments in November were but 400,000 tons. This year the Minnesota Iron Company, the Consolidated, the Oliver and independent mines will keep steadily at it till December 1. Gogebic shipments are about 2,800,000 tons

Explorations continue as actively as ever. President Bacon of the Minnesota Iron Company informs me that his company have purchased the Emmett, 12 forties, near Waucedah, Menominee range, on which they had an option. The company have this week started a drill on East Barasa, Negaunee. The report that they had found ore in quantity where they have been drilling close to Tower, Vermillion range, he states, is incorrect. Mr. Bacon also says the reports connecting his company with explorations north of the international boundary are exaggerated. The company's mines in Minnesota will continue shipments to December and have so far shipped 419,000 tons of Soudan and 740,000 tons of Chandler, aside from the large Mesaba shipments. The company are exploring on sections 7, 8 and 10, town 62—14, but it is yet too early to give result. The work in 7 and 8 is on the Sheridan claim.

Hartford mine, where the Oliver Company have had five power drills at work, has been taken definitely by that company, an announcement which will please Marquette people. The Hartford has in times past shipped 15 000 tons, but none for many years. The Oliver Company were represented on all ranges last week by Dr. Hulst, manager; F. T. Cole, superintendent, and Messrs. Gayley and Clemson of Pittsburgh, who were making a careful tour of inspection. They were making a decision as to work for another year. It has been decided to open the Stevens, East Mesaba, for the year and to make extensive developments on many of the properties under lease, as well as to add to the output of some of those now open. This Stevens, while a low iron, high in phosphorus ore, is hard and much like Vermillion in texture. The company have lately acquired so many mines and have such a large minimum royalty in gross that they will not be likely to push production much above minimum on many that have been opened. They have one mine on the Mesaba that they have held for six or seven years and on which they have steadily paid an annual minimum of 46,000 tons. Their Lake Superior, Marquette, properties will be worked heavily in 1900, as will their Regent, at Negaunee. Their Mesaba minimum to Rockefeller alone is 1 200 000 tons, their Vermillion minimum is 700 000, in both cases on mines only now opened, with considerable more on mines to be opened later. These are not to be confounded with the company's probable mining, but are absolute minimums.

Corrigan, McKinney & Co. are extending the scope of their operations on new ranges. They are looking at lands on the Mesaba and are exploring a flattering property in 61—15, Vermillion range. They have also taken the Star West mine, south of Marquette range, where a siliceous 40 per cent. ore is mined. These low grade siliceous ores of the Cascade district are going to be looked after shortly. They will probably take Dunn, Menominee range, and make a new mine of it.

The Cleveland Cliffs Company are about the only big concern in the lake region that are not the property of some steel maker, and their present prosperity is refreshing. The company have increased their force since June by 600 men and are now employing 1500. They have for some months been carefully examining their lands around Ishpeming and Negaunee, some 45,000 acres, and have now completed the field work, having obtained an exact geological record, something extremely valuable. The company will proceed with future explorations in accordance with this record. They have started their Moro mine, have unwatered their Michigamme, are producing from Imperial, a new acquisition, are opening Beaufort, have reopened their Cliffs shaft, have ceased the practice of leasing their lands, have taken several properties from outsiders, have made a mine of Volunteer, have made extensive improvements at their Tilden, Cleveland, Lake and Salisbury, and if they do not reach pretty close to 1 000,000 tons another year I shall be surprised. They have made many changes underground and never had such a product per man as now. They have gradually increased the thickness of their levels, giving greater stoping hight, have improved their ventilation and machinery underground, have adopted new methods and made radical departures all around that are now bearing fruit. The company occasionally have trouble with old Lake Angeline mud and last week the mud came down with the roof in the Lake shaft, flooding a level and drowning out the men, as well as overwhelming two electric tramming motors. Shipments from this part of the property will be suspended for the rest of the season probably.

The Aragon, Menominee range, is increasing stock pile ground and making ready for a big winter. The Loretto is about to install a new machinery plant, though when a plant ordered now can be delivered is a serious question. A few weeks ago the management of the Penobscot, Mesaba range, wanted a pumping plant to handle 4000 gallons a minute and some of the big machinery manufacturers could promise delivery only in 18 to 20 months.

On Mesaba range steel has been laid on the Eastern Minnesota's extension to the Sauntry mine and construction trains are running, but not much ore, if any, will be shipped this year. The road was to have been done in August and the scarcity of men has alone prevented. There is room on the various ranges for at least 5000 more men. The Lake Superior Consolidated Mines are opening their Hull mine, idle 18 months, and their Rust, also long idle while they will increase the force at Sellers. These are all at Hibbing and will absorb about 700 men. The company's shipments from this group this year will be about 350,000 tons, leaving some 200 000 tons in stock. Hull is opened extensively. It has two working shafts, is down 180 feet and extends underground north and south 1600 feet, being also connected with Rust on the east. It can make an immense output and probably will. Three Wheeling, W. Va., men have an option on Mesabi Chief, west of Hibbing, for $100,000 above the State's 25 cent royalty, and were looking at it this week. Mesabi Chief is a silicon ore and has not been developed. It was refused by the Consolidated some years ago for $150,000, even after 10 per cent. had been paid on the price, explorations proving unsatisfactory. Several thousand acres of mineral land on Mesaba and Vermillion ranges belonging to an old time company are now under option to a prominent pine land firm of Duluth for $300,000.

The annual report of the Duluth & Iron Range road to the State shows gross earnings of $3,051,127; operating expenses of $1 411,302; proportion operating to gross, 46.25; interest and taxes, $698,365; net earnings $976 465; surplus, $1,648,146. The company carried 271,653 028 miles tons; average distance haul per ton, 72.16 miles; average earnings per ton freight, 77.58 cents; freight earnings per mile, $15,883. These figures are worthy of recollection by railway men. D. E. W.

The Hibbard-Rodman-Ely Safe Company.— Some months ago we mentioned the fact that the Hibbard & Rodman Safe Company were engaged in the manufacture of manganese steel bank safes and vaults, and referred to tests of the safe made at Albany, N. Y., last March. It is now announced that the Hibbard-Rodman-Ely Safe Company have been organized, with a capital of $1,000,000. This company are organized to succeed to the business of the Hibbard & Rodman Safe Company, and will manufacture bank safes and vaults of manganese steel which are made by the Taylor Iron & Steel Company of High Bridge, N. J. The following are the incorporators: Alexander C. Humphreys of Humphreys & Glasgow, New York and London; Sidney Dillon Ripley of Equitable Life, New York; John Fritz, formerly of the Bethlehem Iron Company, Bethlehem, Pa.; George W. Young, of United States Mortgage & Trust Company, New York City; W. J. Taylor of Taylor Iron & Steel Company, High Bridge, N. J.; Walter Gaston of Taylor Iron & Steel Company, High Bridge, N. J.; Robert E. Jennings of the Spalding & Jennings Company, Jersey City, N. J. Other prominent mechanical, manufacturing and financial men will be connected with the enterprise.

The old ore concentrator building near Ishpeming, Mich., which was at one time regarded as a most promising venture in preparing low grade iron ore for marketable use, but was abandoned some years since, is now being torn down and the material will be used for a shaft house at the Negaunee mine of the Jackson Iron Company.

Three furnaces are to be built in the Camonica Valley, in Italy, to manufacture iron electrically by the Stassano process.

The War Department and Contractors.

WASHINGTON, D. C., November 7, 1899.—The Secretary of War has made a decision in a notable controversy between contractors that will be of interest to all manufacturers having relations with the Government. He has sustained the ruling of his predecessor, Secretary Alger, to the effect that the bid of a contractor in default on one contract may still be considered in connection with another contract, and further, that if in the opinion of the Department the facts warrant it payments may be made on account of material furnished by a contractor, although at the time of such payment the penalties which have accrued upon contracts in arrears exceed in amount the value of the material so furnished the Government, relying upon the bond given by the contractor for the recovery of penalties if the Government shall decide to enforce them.

It will be remembered that shortly before Secretary Alger left the War Department he gave a hearing to representatives of the American Ordnance Company, who had filed a protest against the awarding to the Driggs-Seabury Gun & Ammunition Company, for 40 6-pounder rapid fire guns and mounts and 40 15-pounder rapid fire guns and mounts, the value of the contract being about $200,000, on the ground that the company were already in arrears on a contract awarded to them in April, 1898, for about $700,000 worth of guns and ammunition, only a small percentage of which had been delivered. The same facts had previously been presented to Assistant Secretary Meiklejohn, who ruled that the bid of a contractor on one contract could not be considered in connection with a new contract. Secretary Alger overruled his subordinate, holding that it should be discretionary with the head of the Department to decide whether to consider the bid of a contractor in default. The representatives of the American Ordnance Company explained their action in protesting by stating that but for the bid of the Driggs-Seabury Company the contract would have been awarded to them, and that but for necessity as they regarded it of completing the contract within the specified time, they would have been able to make a lower price to the Government. Their competitors, they alleged, were not in position to complete the new contract, and would soon be in default thereunder.

The second contract above referred to was finally let to the Driggs-Seabury Company, July 8, 1899, the deliveries to be on the basis of four 6-pounders and mounts in 90 days and six every 30 days thereafter, the deliveries of 15-pounders to be made proportionately. Upon the expiration of the 90 days' period the legal representatives of the American Ordnance Company filed a second protest, which was taken up by Secretary Root, who recently gave a hearing, at which statements on both sides were presented. On behalf of the Driggs-Seabury Company it was said that the delay on their contracts was due not only to the difficulty of procuring material at this time, but also to the fact that the Ordnance Bureau had modified its specifications, and had made certain experiments for the good of the Government, which had prevented the contractors from fulfilling the exact terms of their contract. The Ordance Bureau officials were able to verify these statements, and the chief officers of the company asserted that extra efforts had been made to turn out the material as rapidly as possible, but that it had been deemed advisable to subordinate rapid deliveries to the production of the best guns and ammunition that could be made.

On behalf of the American Ordnance Company Attorney Thomas S. Hopkins declared that his company have made their bids on both contracts in good faith, but with the distinct understanding that all the provisions of the contracts would be strictly enforced. As evidence that at the time these contracts were made it was the intention of the Government to require their terms to be fulfilled Mr. Hopkins read the following letter addressed to the Driggs-Seabury Company by the Acting Chief of Ordnance prior to the letting of the last contract:

"Referring to your proposal of March 11, 1899, it is proposed to award you a contract for 40 6-pounder and 40 15-pounder R. F. guns, subject to the provisions of a contract which will be prepared and sent to you in a few days for execution.

"Among other provisions the contract will stipulate for a deduction in price for delays in delivery, as provided for in the specifications; or, in the discretion of the Chief of Ordnance, in lieu therefor, should you fail to deliver any of the guns at the dates specified in the contract, your right to deliver such guns shall be forfeited, as prescribed in paragraph five of the usual printed form of contract used by the Ordnance Office, with which you are familiar. You are to understand that a compliance with this clause is to be required, and that any guns not delivered at the times specified by you in your bid will, at the discretion of the Chief of Ordnance, be purchased at your expense in the open market or otherwise at the best price obtainable.

"The fulfillment of the terms of this contract shall not in any manner interfere with the fulfillment of the terms of existing contracts with this Department.

"It is desired that you will acknowledge receipt of this communication and notify this office of your acceptance of the foregoing provisions, as until such acceptance is received the contract will not be prepared or sent to you for execution."

As evidence that the Ordnance officials did not regard themselves as responsible for the delays of the Driggs-Seabury Company at any stage of the proceedings Mr. Hopkins read the following extract from a special report by the Chief of Ordnance, dated June 3, one month before the execution of the second contract:

"In view of the many failures under numerous contracts to deliver at stipulated times the time has come to exact penalties and enforce the requirements of paragraph five, which is embraced in and forms part of all contracts. Therefore before the Driggs-Seabury Company be allowed to enter into new obligations, they are to be informed that on and after this date stipulated penalties will be exacted in delivery under their present contract, dated April 15, 1898, for 20 6-pounder and 80 15-pounder R. F. guns, mounts and ammunition. Also if with this understanding they enter into new obligations by the execution of the contract for 40 6-pounder and 40 15-pounder R. F. guns and mounts, for which bids were invited February 27, 1899, the stipulated penalties will be exacted and paragraph five of contract enforced."

Continuing, Mr. Hopkins said that under Secretary Alger's order the Driggs-Seabury Company were in default under both their contracts, having delivered but 8 6-pounders out of 60, and no 15-pounders out of 120 contracted for. It would be a simple matter, he said, if contractors were allowed to default indefinitely for a manufacturer desiring to secure a contract to make a bid sufficiently low to obtain it and then to use the Government's work as a stop gap to keep his plant in operation, when there was nothing else on hand. Thus the material could be produced at a fraction of the cost of turning out under "rush order" conditions. The difference in the cost of building a battle ship in six months or in 16 months, Mr. Hopkins said, was enormous, and the same thing was true of guns and ammunition. Had the American Ordnance Company understood that the material upon which they bid need not be furnished within a year or more they would have made a price far lower than that of the Driggs-Seabury Company. They had expected to deliver according to contract, and their bids were based on current cost of material and labor and upon the necessity of producing the guns and ammunition complete within the time specified.

As shedding light upon the controversy, Mr. Hopkins declared that the American Ordnance Company at the present time had a suit against the Driggs-Seabury Company for alleged infringement of a patent, which was employed in the construction of the guns called for by the contracts in question. The case had been heard on a motion for a preliminary injunction in the Circuit Court for the District of Connecticut, but Judge Townsend on June 20, 1898, in denying the motion, said:

"I am not satisfied that defendant's proposed construction will not infringe certain claims of the party in suit. But as it is admitted that defendant is financially responsible the motion will be denied on the ground that defendant is under contract to furnish the guns in question to the Government of the United States within six weeks from the present time, for use in time of war for coast defense and under the pressure of immediate and impending danger. In these circumstances the defendant should not be restrained from delivering such necessary war material to the Government."

Commenting on this decision Mr. Hopkins asserted that the Driggs-Seabury Company have thus avoided an injunction for the alleged infringement of the American Ordnance Company's patents on the ground that they must deliver the guns to the Government within six weeks from June 20, 1898, while the Spanish-American war was in progress, but that they had made no such deliveries, and had not been in position to do so at the time of Judge Townsend's decision.

Continuing, Mr. Hopkins said that the American Ordnance Company did not propose to institute any factious opposition to a business rival in this or any other case, but if the War Department should remit the penalties now accrued against the Driggs-Seabury Company, thereby establishing a precedent that might with perfect fairness be invoked by any other contract or, it must result in the utter demoralization of the whole business of furnishing such material to the Government. Under the terms of its contract with the Driggs-Seabury Company the Department was under a practical obligation to go into the open market and buy the desired material which the American Ordnance Company have for sale.

The American Ordnance Company have furnished the Government about 500 guns and mounts and 365,000 projectiles, and their material had successfully withstood every test. The Driggs-Seabury Company have furnished but eight guns of any description, and they were but 6-pounders. Under the circumstances Mr. Hopkins insisted that in justice both to the Government and the American Ordnance Company the penalties incurred by the Driggs-Seabury Company should be enforced.

Secretary Root gave Mr. Hopkins respectful attention, but upon the conclusion of his statement said that he had decided that the contract with the Driggs-Seabury Company was a matter between the Government and that company exclusively, and that technically the American Ordnance Company have no status in the proceedings. Therefore he did not believe it to be his duty to consider anything but the Department's interests. This closed the hearing.

On the 3d instant Secretary Root took the matter up again, and after further investigation made a ruling directing that the penalties accrued against the Driggs-Seabury Company should be suspended, but not waived, and that material furnished by the company hereafter, though in arrears, should be accepted and paid for. In explanation of this ruling Secretary Root said to the correspondent of *The Iron Age:*

"I have decided that in view of various considerations, and especially in view of the modifications of certain requirements made by the Ordnance Bureau, the interests of the Government do not require that the penalties which have accrued against the Driggs-Seabury Company should be exacted at this time. They have given a bond with sureties against which the Government may proceed in case it is desired to enforce these penalties, and in the meantime material supplied by this company will be received and paid for without regard to the penalties. The Department has considered the welfare of the Government only in this matter, and does not feel that the American Ordnance Company have any status with regard to it. That company have been the beneficiaries of similar indulgence in the past."

A Sample Warehouse in Shanghai.

President Theodore C. Search of the National Association of Manufacturers has sent out the following statement in regard to the proposed American sample warehouse in Shanghai, China:

There have been so many erroneous and misleading public statements relative to the American warehouse in Shanghai that it becomes necessary to state the facts in order to avoid any further misunderstanding. For more than six months past the National Association of Manufacturers has been making preparations for the establishment in Shanghai of a large warehouse for the display and sale of American goods made by the members of the association, and we have advanced so far with our plans that we shall probably be able to open the warehouse for business about the first of the year. We have no thought of erecting a building, as has been stated in the papers, and there is no connection whatever between the American warehouse in Shanghai and the National Export Exposition in Philadelphia or the Philadelphia Commercial Museum. There is no intention to take exhibits from the Export Exposition to our warehouse in Shanghai, and none of the exhibitors have been approached with any such proposition. The warehouse in Shanghai is exclusively an affair of the National Association of Manufacturers, and its facilities will be available only to our members, a large number of whom have already contracted for space for the display of their samples.

The warehouse will contain two departments, one for the display of goods and the other for making sales. The financial arrangements, which have been made in the United States and China, will permit the transaction of all business upon a cash basis, and any goods that may be sold through the warehouse will be paid for at time of shipment from the United States. The association itself will not undertake any business transactions, but the selling department will be conducted under the supervision and control of the association, and every facility will be afforded for the protection of its members and for promoting their business.

I regard this movement on the part of the association as the most important step that has ever been taken in China, with a view to the extension of American trade in that country. It will be entirely an American institution from beginning to end. This warehouse will be the second in a series of such establishments which the association has undertaken. The first was opened in Caracas, Venezuela, a year and a half ago, and plans for others to follow the one in Shanghai are now under consideration.

The Michipicoton Ore Fields.

In view of recent widely printed statements of the extent of ores of iron found on the northeast shores of Lake Superior, and the late announcement of the organization of a $20,000,000 iron, timber and transportation company to handle these ores, some facts may be interesting.

The Sault Ste. Marie Water Power Company have been in existence a number of years. They have now in operation several manufacturing concerns at Sault Ste. Marie, Ontario, including a large pulp mill and some chemical works, the power for all of which is derived from a canal connecting Lake Superior and the St. Marie River, below the rapids, which has an 18-foot fall. The company are now engaged with a large force of men and several steam shovels, &c., in building a very large canal, 400 feet wide and from 12 to 16 feet deep, on the American side of the Sault River to develop the same power, but on a very large scale. This canal is well along toward completion. It is to be utilized for more chemical works, and, it has been generally understood in Canada, for the carrying out of a contract reported to have been made with the Krupps of Germany for the delivery of a large quantity of nickel steel. But it may be safely stated, of course, that no such contract has been made. The report has been, and still is, that this steel is to be manufactured at the Sault by electricity generated by the water power now being improved, but so far as most iron makers are aware the manufacture of steel by electricity is still a matter of the laboratory, and not of commercial practice.

The same interests that have made the improvements noted at the two sides of the Sault River have recently gone to the north shore of Lake Superior at Michipicoton, where they have discovered a bed of hard hematite of good quality, though not so high as some ores of the Lake region. This bed of ore is bounded on the east by a rock outcrop, which seems to inclose it more or less on three sides. Running westerly 300 feet a lake is reached, which is 115 feet deep, and it is quite possible that the ore extends under this. The bed is 350 to 400 feet wide. Up to this time no holes have been drilled in the ore to ascertain its depth, or whether or not it is a mere blanket or a deep and valuable find. The rocks of the country are generally nearly vertical, which is, of course, a favorable indication, but aside from this the company are said to know nothing of the formation.

To this ore bed, which has been named the Helen mine, a railroad is under construction. From 600 to 700 men are at work, and one steam shovel, one locomotive and a lot of rails are on the ground. Some track has been laid from the harbor toward the ore, the distance being 12 miles. A merchandise dock is under construction, and plans for an ore dock have been drawn, with the idea of construction this winter. It has been announced that the company have sold 15,000 tons of ore for delivery this fall, but no such delivery can be made.

The company, or associated interests, have now at work a force of some 50 trained explorers and woodsmen who are looking for other ore outcrops in the same region. Several hundred square miles are said to have been carefully gone over, every indication, every bowlder, noted and examined. But so far this search has been unsuccessful. In all that territory no ore aside from that of the Helen Mine has been found. Some float bowlders have been located, but an attempt to trace them back has been unsuccessful.

It is stated that one of the main objects of the water power interests in this enterprise is the securing of a concession from the Canadian Government of a very large tract of wood pulp lands lying to the north, said to be something like 2000 square miles.

For the handling of these interests the company whose announcement was made the other day are to be formed. This is the Ontario & Lake Superior Company, who are to be capitalized by the issue of $6,000,000 in 7 per cent. non-cumulative preferred and $14,000,000 in common stock, and are to take over the two Algoma interests controlling the Helen mine and the railroad thereto, as well as the land concessions. It it stated that this road is ultimately to be extended to the Central Pacific Railroad, near Missanabie, 120 miles, and even beyond to Hudson Bay. F. H. Clergue of Sault Ste. Marie is manager of the company, as well as of their associated interests, water power and manufacturing.

D. E. W.

Signor Marconi, who is at present on board the flagship "New York" making experiments in wireless telegraphy for the benefit of the United States Navy, has been sued for infringement of a patent issued some years ago to Professor Amos Dolbear of Tufts College, Boston. The claim made by Professor Dolbear is that the patent in question broadly covers the art of wireless telegraphy and telephony.

An Increase in Pig Iron Production

Stocks Decline Further.

A considerable number of blast furnaces started during October, and in some districts, notably in Pittsburgh, the output was heavy, with the same plants working. The result is that we entered the current month with the greatest production progressing.

The weekly capacity of the furnaces in blast on November 1 compares as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
November 1, 1899	287	288,522
October 1	265	278,650
September 1	257	267,335
August 1	244	267,672
July 1	237	263,363
June 1	220	254,062
May 1	217	250,095
April 1	205	245,746
March 1	192	228,195
February 1	195	237,639
January 1	200	243,516
December 1, 1898	195	235,528
November 1	196	228,935
October 1	192	215,635
September 1	186	213,043
August 1	187	206,777
July 1	185	216,311
June 1	190	225,398
May 1	194	234,163
April 1	194	233,339
March 1	193	234,430
February 1	184	228,338
January 1	188	226,608
December 1, 1897	191	226,024
November 1	183	213,159
October 1	171	200,128
September 1	161	185,506
August 1	152	165,378
July 1	145	164,064
June 1	146	168,380

The status of the charcoal furnaces was as follows:

Charcoal Furnaces in Blast November 1, 1899.

Location of furnaces.	Total No. of stacks.	No in blast.	Capacity per week.	No. out of blast.	Capacity per week.
New England	11	3	245	8	730
New York	2	2	208	0	0
Pennsylvania	13	2	110	11	550
Maryland	4	0	0	4	569
Virginia	4	1	45	3	290
Ohio	8	3	210	5	310
Kentucky	3	0	0	3	200
Tennessee	5	4	1,061	1	75
Georgia	3	1	420	2	300
Alabama	7	3	704	4	600
Michigan, Missouri and Wisconsin	15	9	4,019	6	2,688
Texas	4	1	91	3	750
Utah	1	0	0	1	175
Oregon	1	0	0	1	275
Totals	81	29	7,113	52	7,512

As compared with previous months the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
November 1, 1899	29	7,113
October 1	25	6,222
September 1	24	5,665
August 1	22	6,189
July 1	20	6,018
June 1	16	4,943
May 1	20	4,846
April 1	17	4,777
March 1	16	4,330
February 1	17	4,967
January 1	20	6,026
December 1, 1898	18	6,018
November 1	20	5,947
October 1	20	5,732
September 1	21	6,293
August 1	22	6,459
July 1	19	5,647
June 1	20	6,762
May 1	18	6,571
April 1	16	5,716
March 1	16	5,470
February 1	14	4,734
January 1	16	5,442
December 1, 1897	19	5,061
November 1	19	4,656
October 1	20	4,636
September 1	21	4,555
August 1	20	4,003
July 1	14	2,894
June 1	15	3,321

Work was resumed by Excelsior and Pioneer furnaces in Michigan.

Coke and Anthracite Furnaces in Blast Nov. 1.

Location of furnaces.	Total No. of stacks.	No. in blast.	Capacity per week.	No. out of blast.	Capacity per week.
New York	13	6	6,551	7	3,650
New Jersey	5	4	2,697	1	600
Spiegel	2	2	275	0	0
Pennsylvania:					
Lehigh Valley	28	20	10,502	8	2,930
Spiegel	1	1	100	0	0
Schuylkill Valley	14	12	9,020	2	1,339
Upper Susquehanna	5	4	3,176	1	600
Lower Susquehanna	10	9	5,430	1	250
Lebanon Valley	12	10	6,929	2	934
Pittsburgh District	29	29	65,175	0	0
Spiegel	1	1	2,389	0	0
Shenango Valley	15	14	17,917	1	935
Western Pennsylvania	20	13	15,597	7	2,754
Spiegel	1	1	850	0	0
Maryland	4	2	3,959	2	1,450
Spiegel	1	1	371	0	0
Wheeling District	10	10	11,974	0	0
Ohio:					
Mahoning Valley	13	12	19,052	1	690
Central and Northern	11	10	17,761	1	1,000
Hocking Valley	11	9	4,885	2	460
Hanging Rock	2	2	700	0	0
Illinois	15	13	25,688	2	3,030
Spiegel	1	1	820	0	0
Minnesota	1	0	0	1	900
Wisconsin	4	4	3,312	0	0
Missouri	2	1	950	1	750
Colorado	3	2	2,150	1	800
The South:					
Virginia	21	13	8,518	8	5,124
Kentucky	5	5	2,609	0	0
Alabama	37	24	22,580	13	8,600
Tennessee	13	12	9,264	1	400
Georgia	2	0	0	2	960
North Carolina	2	1	208	1	400
Totals	314	248	281,409	66	38,556

In comparison with previous months the record of the coke and anthracite furnaces stands as follows in gross tons:

	Number in blast.	Capacity per week.
November 1, 1899	248	281,409
October 1	241	272,428
September 1	233	261,670
August 1	222	261,483
July 1	217	257,345
June 1	204	249,119
May 1	197	245,249
April 1	188	240,969
March 1	175	223 865
February 1	178	232,672
January 1, 1899	180	237,490
December 1, 1898	177	229,510
November 1	176	222,988
October 1	172	209,903
September 1	165	206,750
August 1	165	200,318
July 1	166	210,664
June 1	170	218,636
May 1	176	227,592
April 1	178	227,623
March 1	177	228,960
February 1	170	223,604
January 1 1898	172	221,166
December 1, 1897	172	220,962
November 1	164	208,503
October 1	151	195.492
September 1	140	180,951
August 1	132	161,375

During October the following furnaces blew in: One new Thomas at Hokendauqua, Punxy in Western Pennsylvania, Chickies on the Lower Susquehanna, Brislot in Virginia, Zanesville in Ohio, Missouri and Clifton, one Sloss and one Ensley in Alabama. There were blown out for repairs one Joliet and Iroquois in the Chicago district.

Furnace Stocks.

The position of furnace stocks, sold and unsold, as reported to us, was as follows on November 1, the same furnaces being represented as in former months. This does not include the holdings of the steel works producing their own iron:

Stocks.	June 1.	July 1.	Aug. 1.	Sept. 1.	Oct. 1.	Nov. 1.
Anthracite and Coke	167.587	114,788	107,270	107,321	93,250	89,709
Charcoal	65,643	54,547	42,998	30,500	27,291	21,834
Totals	233,235	169,335	150,268	137,821	120,541	111,543

Warrant Stocks.

We are indebted to the American Pig Iron Storage Warrant Company for the following statement of stocks of warrant iron:

Stocks.	June 1.	July 1.	Aug. 1.	Sept. 1.	Oct. 1.	Nov. 1.
Coke and Anthracite	46,900	33,900	26,800	20,200	14,800	10,300
Charcoal	20,400	16,900	15,700	12,400	7,700	6,100
Totals	67,300	50,800	42,500	32,600	22,500	16,400

MANUFACTURING.

Iron and Steel.

The new blast furnace to be built by the Sharon Steel Company at Sharon, Pa., will be 100 feet high, 21 feet at the bosh, and will have a daily capacity of about 600 tons. It will be equipped with four Kennedy-Cowper hot blast stoves, 22 feet in diameter and 100 feet high. There will be 3000 horse-power Geary water tube boilers, while the engines will be furnished by Wm. Tod & Co. of Youngstown, Ohio. The furnace will be built from plans that will allow an additional stack to be erected with as little expense as possible. The main building, to contain the open hearth plant, will be built by the Shiffler Bridge Company of Pittsburgh, but work will not likely begin on it before early spring.

The Old Meadow Rolling Mill Company, Scottdale, Pa., manufacturers of black sheets, have increased their capital stock from $125,000 to $300,000. This concern have decided to make some important improvements and additions to their plant, among which will be a pickling and galvanizing department. Work on these additions will be commenced in a short time.

The Illinois Steel Company have recently ordered four gravity discharge heating furnaces of Morgan Construction Company of Worcester, Mass. These furnaces will be built under the Morgan patents, and supply billets to the three rod mills at Joliet, Ill.

The Ohio Steel Mfg. Company have been organized and will erect a plant at Canton, Ohio, for the manufacture of open hearth steel castings. The plant will contain one 15-ton open hearth furnace with necessary cranes, &c. The main building will be 200 x 95 feet, and will be built by the Wrought Iron Bridge Company of Canton, Ohio. The officials are Edward S. Raff, president; Edmund G. Fisher, vice-president; Harry B. Stewart, secretary, and Samuel Lowenstein, treasurer.

Last week the Ohio Iron & Steel Company, operating Mary Furnace, at Lowellville, Ohio, connected a fourth new Kennedy-Cowper stove, 19 x 85 feet, and are also adding a new 5-foot stroke Corliss gear blowing engine manufactured by Wm. Tod & Co., engine builders, of Youngstown, Ohio, giving the Ohio Iron & Steel Company a complement of four engines. With the recent improvement made, it is expected the daily product of Mary Furnace will be not less than 350 tons. There has also recently been added 2000 horse-power water tube boilers.

The Chartiers Iron & Steel Company of Pittsburgh, with works at Carnegie, Pa., manufacturers of fine grades of iron and steel sheets, have recently made considerable shipments of polished sheets to France. This concern are supplying large quantities of sheets for electrical purposes, and one of their large customers recently ordered a quantity of material for export to France. In addition to this foreign shipment, Kirkpatrick & Co., Limited, with whom the Chartiers Iron & Steel Company are associated, are filling an order for a quantity of similar material for export to Japan. Kirkpatrick & Co. are also making a specialty of fine sheets for electrical purposes.

Chess Brothers of Pittsburgh, who make expanded metal lathing and fencing, and whose works are located at Rankin, Pa., have under consideration the building of an open hearth steel works at Rankin. In case the plant is built they would supply themselves with steel to be used in the manufacture of expanded metal, and would also be sellers of open hearth steel in the open market. Their plans are not fully defined, and it is not known at this time whether the plant will be built or not.

The Elliott-Blair Steel Company, New Castle, Pa., manufacturers of cold rolled steel, have recently built a large addition to their plant.

The new boiler tube plant of the Atlantic Tube Company, at Beaver Falls, Pa., will soon be ready for operation. It is reported that the entire output of the plant has been sold ahead for some time.

David Lamond, contracting engineer, 716 Ferguson Block, Pittsburgh, Pa., has closed a contract with Means, Kyle & Co. to erect for them at their Hanging Rock blast furnace, Hanging Rock, Ohio, one C. H. Foote two-pass fire brick stove, 18 x 75 feet in size.

The Vesuvius Charcoal Iron Company of Ironton, Ohio, have leased from the Ironton Coal & Iron Company the Vesuvius Furnace, which is a small charcoal iron furnace, the capacity being about 12 tons per day. They propose to manufacture warm blast charcoal pig iron for use in foundries for making specially strong castings, car wheels, &c. The Vesuvius Furnace is very old, having been built more than 50 years ago. Special ores are on the property, suitable for the manufacture of strong neutral pig iron. The product of the furnace has been used for the making of car wheels for many years. Recently the furnace has been making cold blast iron for use in chilled rolls, but now goes back to the manufacture of strong warm blast charcoal iron.

The Scranton Bolt & Nut Company, who are erecting a new plant at Scranton, Pa., are urging construction as fast as possible, and expect to be in operation about November 20. The concern will manufacture bar iron and a general line of bolts and nuts. The officials of the Scranton Bolt & Nut Company are W. D. Zehnder, president; C. H. Weller, vice-president; L. M. Horton, secretary and treasurer, and E. M. Zehnder, general superintendent.

The Napier (Tenn.) Furnace will start this week. Considerable repairs have been made and an amount of raw material accumulated to insure a steady run. The Napier Furnace has been out of blast for several years, but the brand will be remembered as one that was used for car wheel and foundry purposes. It will use all brown ore, and its fuel will consist of charcoal with a mixture of low sulphur coke. It is expected that the coke will have a beneficial effect in opening up the grain of the iron and adding the requisite amount of silicon. The product will be handled solely by Rogers, Brown & Co., and branch houses.

The Carnegie Steel Company, Limited, are introducing labor saving devices at the Edgar Thompson blast furnaces at Bessemer, by which the ore will be charged into the furnace automatically. A large number of men will be discharged.

J. W. Carlin of Pittsburgh, owner of the Premier steel plant at Indianapolis, Ind., is reported by the Indianapolis papers to have abandoned his purpose of putting the works in operation, and that in all probability they would shortly be "scrapped."

The building in Harvey, Ill., known as the Automatic plant, and last used by the Calumet Iron Works, has been occupied by a new organization stated to be the Hercules Steel Casting Company. They will add another building, 65 x 150 feet, and engage in the manufacture of steel castings for the general trade.

The Colorado Fuel & Iron Company have their new plate mill in operation, and are prepared to furnish steel plates from No. 10 gauge to ¾ inch. It is an important addition to the company's plant at Pueblo.

The Dillon-Griswold Wire Company, Sterling, Ill., are reported by local papers to have started their new wire rod mill on the 25th ult.

The Eleanor Iron Company, whose works are at Hollidaysburg, Pa., main office at Tyrone, and branch office at Harrisburg, will start their 10-inch mill on bar iron and skelp at once. They state that they never had any iron returned to them during the three years of their operation from 1895 to 1897, inclusive, which is a remarkable record. The mill has been running on muck bars since last spring, but the management have decided now to commence on finished iron at once.

The Cherokee Furnace, at Cedartown, Ga., controlled by Eugene Zimmerman, Talladega, Ala., is expected to be put in blast about December 1.

The Missouri Furnace, operated by McNair & De Camp, St. Louis, Mo., was blown in October 25.

The old Carp Furnace, at Marquette, Mich., will hereafter be known as the Excelsior, and is operated by Schaffer & Gray, Marquette.

Machinery.

Part of the structural work of the new addition to the plant of the Westinghouse Machine Company, at East Pittsburgh, is completed and the foundations are finished, but it will be some time before the walls are built and the machinery erected. The pattern shop, which was blown down when partially completed, has been re-erected and is now in use. Preparations are being made for the erection of a steel foundry and steel forging plants, which will have a capacity of 80 tons of steel castings and forgings per day. The Westinghouse Machine Company are running their large works to full capacity and have some very large contracts on hand.

A fire at 39 to 43 West Washington street, Chicago, on the 1st inst., burnt out M. McGregor & Co., manufacturers of machinery; Frank Swett & Co., saw manufacturers, and Becker Bros., electric motor manufacturers.

The Grand Rapids Malleable Iron Company of Grand Rapids, Mich., are building a five-furnace plant for the production of malleable castings, the plan being to make a general line and to make a specialty of carriage and wagon hardware. They are equipping the plant with the most modern appliances. All the power is transmitted by electricity, the annealing room is served with a traveling crane and each department is supplied with the most recent labor saving devices. The officers are Edward Lowe, president; Henry Idema, vice-president; Harvey H. Hollister, treasurer, and Douglas M. Ray, secretary. The manager is I. Preston Rice.

The incorporation of the Hilbert-Frieberg Machine Company of Cincinnati, Ohio, adds one more to the long list of machine tool building concerns of the Queen City. The new company are capitalized at $75,000, the principal stockholders being Charles and Edward Hilbert and Harry A. Frieberg. The Hilberts have been engaged in the construction of special machinery for many years. The additional capital will enable them to branch out more extensively. The first step in that direction will be the removal of the present plant to a large structure located on the canal between Race and Vine streets, where they will have more than three times their former facilities.

The plant of the Philadelphia Machine Screw Works, Philadelphia, has recently been enlarged and re-equipped. Additional machinery added includes automatic machinery for making all kinds of special machine screws, electric appliances and other articles which can be made from solid rods. They have a great many orders on hand for their products, and are running over-

time to keep up with their contracts for deliveries. They are about to put on the market a patented universal adjustable box tool which they think will attract considerable attention from the trade.

The Canton Roll & Machine Company, recently organized, have completed their plant at Canton, Ohio, and will manufacture chilled, sand and semi-steel rolls, rolling mill and tin plate machinery and heavy castings of every description. The buildings and equipment for this plant were furnished for the most part by Pittsburgh concerns. The main building is 200 x 90 feet and constructed of steel. The building was erected by the Fort Pitt Bridge Company. The foundry contains a Whiting cupola, a 15-ton air furnace, built by Edward E. Erickson of Pittsburgh, core ovens, &c., while the machine shop is well equipped with roll lathes, furnished by the Mesta Machine Company: drill presses, boring mills, &c. The plant has a 15-ton electric traveling crane. The company was organized by W. J. Steele, J. E. Carnahan and others who were connected with the Leechburg Foundry & Machine Company, at Leechburg, Pa.

The Union Boiler Cleaner Company of Pittsburgh will apply for a charter of incorporation on November 23.

The Adams Company, Dubuque, Iowa, are pushing work on the construction of additional buildings. They are of brick, one story high. One will be 60 x 200 feet and the other 60 x 100 feet. The capacity of their plant will be greatly increased by these additions. They manufacture molding machines, milling machines and hardware specialties.

The Christensen Engineering Company, Milwaukee, Wis., are arranging to build a large foundry and machine shop.

The Belle City Malleable Iron Works, Racine, Wis., changed hands last week and are now under a new management. Most of the stock of the old company was recently purchased by T. W. Harvey, Jr., of Chicago, who will be the president and general manager; the superintendent will be P. J. Martin of Cleveland, Ohio, and the secretary and treasurer, J. C. Fortneir. In addition to the large jobbing business done by the old company, agricultural and railroad work will be added.

C. A. Lawton & Co., De Pere, Wis., are building a brick addition, 20 x 40 feet, to their machine shop. They are receiving orders for pulleys by the carload these days.

Heggie Bros., Joliet, Ill., are erecting an extensive addition to their boiler and tank works. The building will be 80 x 175 feet and 52 feet high, with a steel roof, and will be equipped with a traveling crane traversing its entire length.

The Champion Iron & Steel Company, Muskegon, Mich., have placed an order for a large lot of rolling mill machinery with the New Albany Mfg. Company, New Albany, Ind.

The Chicago Mica Company and the Chicago Wheel Company are arranging to remove their manufacturing departments from Chicago to Valparaiso, Ind., where they have purchased a building 100 x 120 feet, three stories high, formerly used as a woolen mill. They will retain a Chicago office at 39 West Randolph street. The Chicago Wheel Company manufacture emery wheels and other emery goods.

The Bullock Electric Mfg. Company of Cincinnati, Ohio, report 55 orders for the month of October, the machines ranging in size from the smallest to 300 kw. capacity. A repeat order was received from the Maryland Steel Company of Sparrow's Point, Md., this making the fifth order and being for a 300-kw. generator and several motors. Two 300-kw. alternating current generators were shipped to the Wilson Aluminum Company of Holcomb's Rock, W. Va., to be used in the manufacture of ferrochrome, an electro-chemical product used in the manufacture of chrome steel.

The Tanite Company of Stroudsburg, Pa., still continue the distribution of their machines among important works across the Atlantic. Only a few months ago they made a shipment of their letter "D" machine for the Government of the Netherlands. At the present time they have under consideration a large Russian order for their surfacing machines or guide bar grinders, such as were supplied a year or so since, through Manning, Maxwell & Moore, as part of the big American locomotive plant for Russia, and the same as was supplied, through R. Cameron & Co. of New York, to the Government railways of New Zealand. They are also filling an order for an American firm for one of their two-wheeled No. 5 grinders (weighing over 1 ton), such as was originally designed for and supplied to the French Government. The Tanite Company have actually in hand at the present time a large order for emery wheels for Russia and another for New Zealand. During the present year the Tanite Company were awarded in this country one of the largest Government contracts for emery wheels which has ever been given out.

Springfield Mfg. Company, Bridgeport, Conn., advise us that they are having a very large export trade, and that they recently received orders for a number of their surface grinders to be shipped to Egypt and Syria.

The second mortgage bondholders of the James P. Witherow plant at New Castle, Pa., but operated for several years under the name of New Castle Engineering Works, appeared in court in New Castle on November 6 and objected to the sale of the plant to James W. Reis and others of New Castle for $107,000, subject to a first mortgage of $88,000. The petitioners claimed that the Union Construction Company of Pittsburgh were willing to give $120,000, and that it was understood the American Steel & Wire Company would give $140,000. The sale of the plant has been stayed for one week.

Hardware.

The Buhl Stamping Company, Detroit, Mich., manufacturers of milk stock, tubular lanterns, cream and dairy pails, have let contracts for a three-story brick warehouse, 66 feet front by 98 feet deep, and a boiler house 21 x 38 feet, three stories high, to be erected on the Congress street front. A 13-foot driveway will separate the warehouse from the boiler house. One of the largest size platform scales will be located in the driveway, and all goods will be received and loaded there. To the rear of the warehouse an annealing house 16 x 70 feet, 27 feet high, will be built. The whole area of 260 x 150 feet on Third, between River and Congress streets, will be covered with three and four story buildings, and will be one of the largest, as well as one of the best equipped plants of the kind in the United States. At present 200 men and boys are employed, and when the new additions are completed this number will be very materially increased.

The Markle Lead Company, St. Louis, makers of the Blackbird brand of targets, have greatly increased the capacity of their plant. Additional machinery has been installed to meet the growing trade.

Wm. Rose & Bros., manufacturers of bricklayers', plasterers' and molders' tools, Sharon Hill, Pa., advise us that they are running with materially enlarged capacity, and are between one and two months behind their orders.

Job T. Pugh, Thirty-first and Ludlow streets, Philadelphia, has shipped a large quantity of brace bits to the Brazilian Government, the order having been received through their representatives at Philadelphia.

Lawrence, Newhall & Co., Shawmut, Maine, dealers in lumber, &c., are intending to start a shovel handle factory at Shin Pond, near Patten, Maine. They are now getting out the timber and the machinery for the plant is on the road. The business will be inaugurated under the style of the Butterfield Mfg. Company.

Old Dominion Iron & Nail Works Company, Richmond, Va., are having considerable demand for the old-fashioned iron cut nail, which they have resumed manufacturing, and will continue to make as long as the market price will justify. At the recent annual meeting of the company's stockholders the following officers were elected: Arthur B. Clarke, president and treasurer; M. F. Montague, vice-president; J. B. Carter, secretary, and R. U. Blankenship, superintendent. All the company's departments are in operation, turning out muck bars, iron and steel, cut nails, tin roofing plates, horse shoes, bar iron, bolts and nuts and harrow teeth.

Laughlin Nail Company, Wheeling, W. Va., are not at present manufacturing cut nails, but it is understood that there is only a temporary interruption in the operation of this branch of their business.

A reorganization has been effected of the Chicago Hardware Mfg. Company, who have a factory at North Chicago, near Waukegan, Ill. A controlling interest has been purchased by C. H. McCormick, M. F. McCormick, Stanley McCormick, J. H. Shields, N. S. Patton, R. B. Patton and H. B. Patton of Chicago. Of the new company James H. Shields will be president and manager and Norman S. Patton vice-president. The company manufacture builders' hardware, and with fresh blood and capital the business will be more vigorously pushed.

Batcheller & Sons Company, Wallingford, Vt., manufacturers of the Standard diamond "B" agricultural forks, report having already booked orders for the coming season equal to their full capacity.

Miscellaneous.

A big annealing plant, backed by Pittsburgh capitalists, has been located at Saltsburg, Pa., and will give employment to a large number of men.

Schultz Bridge & Iron Company, McKee's Rocks, Pa., have been awarded a very large contract for structural work in Tehuacan, Mexico. The contract calls for the erection of an iron and steel pier and dock on the harbor and a steel bridge.

The Standard Underground Cable Company of Pittsburgh have given a contract for the erection of their new plant at Perth Amboy, N. J., to J. V. Hedden & Sons of Newark. There will be five buildings, all of brick and iron construction.

The Carroll-Porter Boiler & Tank Company of Pittsburgh are making large shipments of steel riveted pipe to Mexico. They are also exporting a quantity of pipe to China, and have a number of orders for shipment to South Africa.

The Harbison & Walker Company, Pittsburgh, Pa., manufacturers of fire and silica brick, have had several offers made to them for the ground which is now occupied by their works at Twenty-second and Railroad streets, Pittsburgh. It will be recalled that this concern are building a larger plant at West Homestead, and will abandon their Pittsburgh plant when it is finished. The Harbison & Walker Company announce the removal of their general offices to Rooms 1406-1417, inclusive, Park Building, Pittsburgh, Pa.

The Iron and Metal Trades.

We record further heavy purchases of Pig Iron in the leading distributing centers. Chicago notes sales of Foundry Irons of different grades, aggregating about 50,000 tons, in which is included one block of 10,000 tons. In the New York district one large manufacturing interest have taken about 8500 tons, for delivery during the first half of 1900, and another have purchased a large block for the second half of the year. The Eastern furnace interests have advanced prices further, and as high as $27 has been paid for quick delivery on small lots of No. 1 Lehigh Foundry.

In Bessemer and Basic Iron one large consolidation have purchased in the Central West about 70,000 tons of metal, all for next year's delivery.

Our monthly blast furnace statistics show that the active capacity of the Coke and Anthracite furnaces has increased by 8981 tons weekly, to the magnificent total of 281,409 tons weekly. Yet the very small stock in furnace yards has been drawn upon a little more, and the total stock in warrant yards has declined to 10,300 tons.

Thus far only a few of the furnaces which were expected to go in after a long period of idleness have actually become producers. There is still, notably in the South, quite a considerable number of them which are still to be heard from. During the next few months they will slowly fall into line and may add somewhat to the make. In the whole Central West little additional capacity is available outside of the two furnaces of the Ohio Steel Company, at Youngstown, now being completed.

There is little that is new so far as the Ore situation is concerned. There have been some sales of next season's Ore, but the great purchases are still to be made, and it seems doubtful, according to our Cleveland advices, whether anything will be done this year or next.

It is understood that the great majority of the contracts for Connellsville Coke have been closed, and this week will probably witness the end of the movement.

The situation in Billets is still obscure. Some of the great contracts for next year are still pending.

The decline in Muck Bar is attracting some attention, increasing as it does the spread between Billets and Bars.

In some lines of Finished Iron and Steel the market is easier. This is notably true of Sheet Iron, Galvanized Sheets, Skelp and in some sections in Plates. Structural Material remains firm, although it is hinted that some of the arrangements forming a part of the bridge consolidation may possibly cause some friction among Beam makers.

There is very little doing in the export business. The shipments of Foundry Iron are likely to fall off sharply since it is understood that some of the old contracts have been bought off by American producers. There is some figuring going on in Cast Iron Pipe. In Merchant Pipe an order for Buenos Ayres which was declined here has been placed in Scotland.

Little is being done in importation, aside from some lots of Old Material.

In the metal trade the most conspicuous feature has been the sharp decline in Spelter, putting that industry thoroughly out of gear. Copper remains dull in spite of the recent decline. Tin, too, is weaker. Nickel alone has been recently advanced in price.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Nov. 8, 1899.	Nov. 1, 1899.	Oct. 11, 1899.	Nov. 9, 1898.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	**$23.75**	$23.25	$22.75	$10.75
Foundry Pig, No. 2, Southern, Cincinnati	.....	20.75	20.75	9.75
Foundry Pig, No. 2, Local, Chicago	23.00	23.00	23.00	11.00
Bessemer Pig, Pittsburgh	**24.50**	24.50	24.00	10.15
Gray Forge, Pittsburgh	21.00	21.25	21.00	9.15
Lake Superior Charcoal, Chicago	**25.50**	25.50	25.00	11.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	*38.00*	39.50	38.50	15.00
Steel Billets, Philadelphia	*40.00*	42.00	40.50	17.25
Steel Billets, Chicago	.....	.....	.....	17.00
Wire Rods, Pittsburgh	.....	.....	46.00	21.00
Steel Rails, Heavy, Eastern Mill	**35.00**	35.00	33.00	.....
Spikes, Tidewater	2.65	2.65	2.65	1.40
Splice Bars, Tidewater	**2.30**	2.30	2.25	1.05
OLD MATERIAL:				
O. Steel Rails, Chicago	**20.50**	20.50	20.00	8.00
O. Steel Rails, Philadelphia	**24.00**	23.00	21.50	10.25
O. Iron Rails, Chicago	*33.00*	33.00	35.00	13.00
O. Iron Rails, Philadelphia	**26.00**	26.00	25.00	12.75
O. Car Wheels, Chicago	*20.00*	20.00	20.50	11.25
O. Car Wheels, Philadelphia	**24.00**	22.00	21.00	10.00
Heavy Steel Scrap, Chicago	*17.00*	17.00	19.00	7.75
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	**2.20**	2.20	2.10	1.10
Common Iron Bars, Youngstown	*2.20*	2.15	2.25	.92½
Steel Bars, Tidewater	**2.50**	2.50	2.40	1.10
Steel Bars, Pittsburgh	*2.25*	2.25	2.35	.92½
Tank Plates, Tidewater	*2.95*	3.05	3.00	1.25
Tank Plates, Pittsburgh	*2.60*	2.60	2.75	1.10
Beams, Tidewater	2.40	2.40	2.40	1.35
Beams, Pittsburgh	2.25	2.25	2.25	1.20
Angles, Tidewater	2.40	2.40	2.40	1.20
Angles, Pittsburgh	2.25	2.25	2.25	1.10
Skelp, Grooved Iron, Pittsburgh	*2.00*	2.00	2.10	1.10
Skelp, Sheared Iron, Pittsburgh	2.40	2.40	2.40	1.20
Sheets, No. 27, Chicago	*3.00*	3.15	3.15	2.00
Sheets, No. 27, Pittsburgh	*3.00*	3.00	3.10	1.85
Barb Wire, f.o.b. Pittsburgh	**3.55**	3.55	3.40	1.70
Wire Nails, f.o.b. Pittsburgh	**2.95**	2.95	2.80	1.30
Cut Nails, Mill	2.50	2.50	2.50	1.10
METALS:				
Copper, New York	*17.00*	17.00	18.37½	12.62½
Spelter, St. Louis	*4.50*	4.75	5.35	5.05
Lead, New York	*4.57½*	4.57½	4.60	3.72½
Lead, St. Louis	*4.55*	4.42½	4.50	3.65
Tin, New York	*30.00*	30.50	31.90	18.50
Antimony, Hallett, New York	9.75	9.75	9.75	9.00
Nickel, New York	**40.00**	36.00	36.00	35.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York	4.82½	4.82½	4.82½	2.80

Chicago. (*By Telegraph.*)

Office of *The Iron Age*, 805 Fisher Building,
CHICAGO, November 8, 1899.

Such large orders have been placed for cars that a heavy trade is taking place in all kinds of car material. This is felt not only in the demand for Pig Iron, but also for a great variety of finished products. It would appear as if this source of business would take up a great deal of what otherwise might be unemployed capacity. The market is in excellent shape, and prospects for the future are of the most hopeful character except in Sheets. The prices of Sheets are lower, and unless some concerted action is taken by the manufacturers this branch of trade may become badly demoralized. The price of Plates has also receded somewhat, but this was only to be expected, as they have for some time been abnormally dear as compared with other products.

Pig Iron.—Another active week has been added to the long period of fine business recorded for the Pig Iron trade of this vicinity. Large consumers have bought round lots for deliveries running through the first half of next year, and in some cases contracts have been placed which cover the entire year. The business taken has been largely for Southern Coke and Lake Superior Charcoal, but one contract calling for 10,000 tons local Iron is reported. Car builders and concerns identified with car building are estimated to have purchased over 50,000 tons in this market. Some large consuming interests still remain uncovered, but they are pursuing the policy of purchasing from time to time and not anticipating their business far into the future. The demand from such sources as well as from the small foundries is expected to keep business keyed up to its recent strength for an indefinite time into the future. The shortage of cars which has been an annoying feature for several weeks is still as bad as ever. We quote for cash as follows:

Lake Superior Charcoal	$25.50 to $26.50
Local Coke Foundry, No. 1	24.00 to 25.00
Local Coke Foundry, No. 2	23.00 to 24.00
Local Coke Foundry, No. 3	22.50 to 23.00
Local Scotch, No. 1	24.00 to 25.00
Ohio Strong Softeners, No. 1	24.50 to 25.00
Southern Silvery, according to Silicon	.... to 26.20
Southern Coke, No. 1	22.85 to 23.85
Southern Coke, No. 2	21.85 to 22.85

Southern Coke, No. 3	21.10 to 21.85
Southern Coke, No. 1 Soft	22.85 to 23.85
Southern Coke, No. 2 Soft	21.85 to 22.85
Foundry Forge	20.80 to 21.35
Gray Forge and Mottled	20.80 to 21.35
Southern Charcoal Softeners, according to Silicon	21.85 to 25.85
Alabama and Georgia Car Wheel	24.85 to 25.85
Malleable Bessemer	.... to 25.00
Standard Bessemer	25.00 to 26.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon	31.80 to 32.50

Bars.—Car building interests have been heavy buyers of Bar Iron the past week. The American Car & Foundry Company have covered their requirements for Bar Iron for the first half of next year. The extent of the business coming from this one company may be inferred from the fact that their weekly requirements considerably exceed 1000 tons. Other orders for Bar Iron have been placed for building by railroad companies. The demand from the general trade has also been excellent, so that the past week has been one of the largest ever known in the local Bar Iron trade. Mill shipments of Common Iron are continued at 2.30c. to 2.40c., Chicago, for future delivery, and up to 2.60c. for prompt shipment. Manufacturers of Soft Steel Bars also report a heavy trade, with prices for the usual assortments running from 2.50c. to 2.65c., Chicago, while under special circumstances manufacturers quote down to 2.35c. Mill shipments of Hoops are continued at 2.65c., base, for Bands, Chicago. Jobbers observe no falling off in their business, but, on the contrary, report more orders being received from manufacturing consumers who cannot wait for deliveries by mills. Small lots from stock are quoted at 2.90c., minimum, for Bar Iron; 2.65c. to 3c. for Soft Steel Bars, and 3.90c. to 4c. for Norway and Swedish Iron.

Structural Material.—Trade has recently improved considerably. Plenty of small orders are now being received while some good round lots have been placed by bridge builders and others for stock for deliveries running through the first half of next year. Some good sized inquiries are in the market which may lead to business this week. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15-inch and under, and Angles, 3 to 6 inches, 2.40c.; Beams, &c., 18 inches and over, and Angles over 6 inches and under 3 inches, 2.50c.; Tees, 2.45c.; Universal Plates, 3.15c. Smaller sizes than 12-inch Beams are bringing 4c. to 5c. per lb. in small lots. The Universal Construction Company now have a large stock of Beams and other Shapes in their yards and are ready to supply any reasonable demand for immediate delivery.

Plates.—The local demand for Plates continues very good, the sales for the month of October having far exceeded those of any previous month. The business from jobbers' stocks has been exceptionally good, and the movement continues to be very satisfactory. Prices show a little recession from their recent altitude, which is not surprising, as Plates have been made higher than other classes of Iron and Steel. Some of the mills making narrow Plates are not so crowded with orders now, and are representing themselves as open for business at prices which seem attractive as compared with rates recently ruling, but are still quite high. Mill shipments are now quoted as follows, Chicago, for reasonable deliveries: Tank, 3c. to 3.15c.; Flange, 3.25c. to 3.40c.; Marine, 3.35c. to 3.60c.; Fire Box, 4c. to 5½c. Jobbers quote Tank in small lots at 3.30c. to 3.40c., and Flange, 3.35c. to 3.65c.

Merchant Pipe.—Sales agents are in receipt of continued good orders, and report the situation very satisfactory. Mill shipments are quoted at 50 and two 10's for carloads, and 50 and 10 and 5 per cent. off for small lots. Merchant Steel Boiler Tubes are quoted as follows: 1¼ to 1¾ inches, 35 per cent. off on Steel or Iron; 2 to 2¾ inches, 50 per cent. off on Steel and 45 per cent. off on Iron; for 3-inch and larger, 52½ per cent. off on Steel, 47½ per cent. off on Iron.

Sheets.—The abandonment of the attempt to consolidate the Sheet mills leaves the trade in rather bad shape. The demand for mill shipments is now light except for Galvanized Sheets for car building, which is quite heavy. It is expected that manufacturers will shortly meet to take steps to prevent the trade from becoming demoralized. Stocks at mills are understood to be large, but the present cost of Sheet Bars makes the selling price of Sheets entirely too low. Mill shipments of No. 27 Black Sheets are ruling at 3c. to 3.15c., Chicago, and Galvanized at 70 and 10 and 5. Jobbers have had a good trade in Galvanized Sheets, but the demand for Black has fallen off. They quote small lots from stock at 3.25c. to 3.40c. for No. 27 Black, and 70 to 70 and 5 per cent. off for Galvanized.

Merchant Steel.—Manufacturing consumers appear to have awakened to the fact that next year is not likely to see any serious slump in prices, and quite a number have concluded to place contracts now for what they require. The business of the week has therefore been large. Mill shipments, Chicago delivery, are quoted as follows: Smooth and Finished Machinery Steel, 2.95c. to 3.05c.; Smooth Finished Tire, 2.80c. to 3c.; Open Hearth Spring Steel, 3.60c. to 3.75c., base; Toe Calk, 3.20c. to 3.50c., base; Sleigh Shoe, 2.75c. to 3c.; Cutter Shoes, 3.45c. to 3.65c.; Ordinary Tool Steel, 7c. to 7½c.; Special, 13c. and upward. Jobbers are quoting from store: Crucible Spring Steel, 6c. rates; Open Hearth Spring Steel, 5c.; Smooth Machinery Steel, 5½c.; Toe Calk Steel, 4c.

Billets and Rods.—Nothing has occurred in this market in either Billets or Rods to fix a price.

Rails and Track Supplies.—Nothwithstanding the advanced prices now quoted for Standard Sections of Steel Rails contracts are still being entered. Some good sized quantities have thus been placed, while the demand for small lots has run up to a good tonnage. They are quoted at $35 to $37, according to quantity. The demand for Light Rails continues very fair, with local mills steadily entering orders for future delivery, now being sold up for several months. Round lots are quoted at $35 to $42, according to weight. Track Fastenings continue in good demand, with advances reported in Track Bolts. It is stated that the present price on Track Bolts is the highest ruling since 1884. Quotations are as follows: Steel Fish Plates, 2.50c.; Iron Fish Plates, 2.50c. to 3c.; Spikes, 2.75c. to 2.80c.; Track Bolts, with Hexagon Nuts, 3.95c. to 4c.; Square Nuts, 3.80c. to 3.85c.; Steel Links and Pins, 3.25c.; Iron Links and Pins, 3.15c.

Old Material.—The week has been rather quiet. Some consumers have been in the market to a limited extent, but the leading consumer of Old Material has done absolutely nothing. A little movement is reported in Cast Scrap, but not enough to make it firm. The quotations of all kinds of Old Material are continued, but it may be said that the market is inclined to softness owing to the attitude of consumers. Dealers' selling quotations are as follows per net ton:

Old Iron Rails	$33.00 to $33.50
Old Steel Rails, mixed lengths	20.50 to 21.00
Old Steel Rails, long lengths	22.50 to 23.00
Relaying Rails	25.00 to 27.50
Old Car Wheels	20.00 to 20.50
Heavy Melting Steel Scrap	17.00 to 18.00
Mixed Steel	13.50 to 14.00

Following selling prices are per net ton:

No. 1 Railroad Wrought	$24.00 to $25.00
No. 1 Railroad Track	20.50 to 21.00
Dealers' Forge	18.00 to 19.00
Iron Fish Plates and Angle Bars	25.00 to 26.00
Steel or Mixed Iron and Steel ditto	20.50 to 21.00
No. 1 Cut Mill, for busheling	12.50 to 13.50
Pipe and Flues	13.00 to 13.50
Heavy Cast	15.50 to 16.00
Stove Plate	10.25 to 10.75
Railroad Malleable Cast	.... to 16.50
Agricultural Malleable Cast	.... to 15.00
Iron Car Axles	30.00 to 31.00
Steel Car Axles	23.00 to 23.50
Horseshoes	18.00 to 19.00
Cast Borings	9.50 to 10.00
Steel Car Axle Turnings	12.00 to 12.50
Iron Car Axle Turnings	13.00 to 14.00
Machine Shop Turnings	11.50 to 12.00
Old Boilers, Iron, whole	6.00 to 8.00
Old Boilers, Iron, cut	14.00 to 15.00
Old Boilers, Steel, whole	5.00 to 6.00
Old Boilers, Steel, cut	13.00 to 14.00

Metals.—For the first time in many years prices of Lake Superior Copper and Casting Copper are the same. Carload lots are quoted at 17¼c. Pig Lead is unchanged at 4.55c., with little doing.

Tin Plate.—The local supply of Tin Plate for some reason is not so ample as in some of the other portions of the country. Jobbers are having a large trade, but do not get deliveries from the factories fast enough to keep their shipments up to what they should be. Prices are running as before, and it is expected that the temporary discontinuance of manufacturing at a number of the Tin Plate works, which are stated to be closed for the purpose of overhauling machinery, will keep the market firm.

The Ludlow Valve Mfg. Company, Troy, N. Y., have opened a branch house on the corner of Washington and Canal streets, Chicago, under the management of H. E. Keeler. A full stock of the company's goods will be carried by the Chicago branch. Their business has heretofore been handled in Chicago by the National Tube Company. Mr. Keeler has long been connected with the sales department of the latter company, and enjoys a wide acquaintance with the Western trade.

The fiscal year of the Amalgamated Association or Iron, Steel and Tin Workers at Pittsburgh closed Octobef 31. The only change made among the officials is that M. F. Tighe of Wheeling, W. Va., succeeded Stephen Madden as assistant secretary.

Philadelphia.

Office of *The Iron Age*, Forrest Building,
PHILADELPHIA, PA., November 7, 1899.

The market is unsettled and difficult to diagnose very closely. Pig Iron is extremely strong and looks like going higher because of its scarcity. Billets are just hanging fire, neither side being much inclined to force business, but ratner to await developments. Finished Material is also somewhat irregular, and while there is no general decline in prices, there is not the strength that there was until within the past day or two. It may all pass away in the course of a few days, but buyers want to see some evidence of its doing so before they commit themselves to any heavy engagements. If requirements for consumption do not permit much of a wait, the market will soon show it, and it is just this test that everybody is waiting for. There are no unfavorable features in sight, none whatever, but the trade realize that the time has arrived when it is desirable to take new soundings so that they may know for certain just where they stand. A large business during the coming year seems assured, and costs of production are going to be very high, but the point to be determined is, what sort of proportion is there going to be between supply and demand? In every direction there has been increased production, and a still greater increase is in prospect in the near future—will the demand be large enough to absorb the prospective increase? The impoverished condition of stocks proves that there has been no excess of production so far. On the contrary, there has been and still is an inconvenient shortage. Will the usual midwinter dullness enable producers to catch up, and will the anticipated larger output leave even a small surplus beyond current requirements? These are questions which the trade are trying to solve, correct answers to which at this time would be of vast importance. It is believed that some of the large interests are endeavoring to force a lower range of prices by withdrawing orders. There is no reason to think that there is going to be any actual decrease in requirements, but strenuous efforts will be made to depress prices in the hope that if a lower range cannot be secured it will at least prevent further advances. The immediate future may therefore be regarded as somewhat unsettled, although, as we said before, there is no reason to suppose that the volume of business will show any material decrease except such as may be incidental to the season.

Pig Iron.—As intimated in our last week's report, prices have made a further advance. The situation at this time appears to be stronger than ever, and $25 Iron is practically an accomplished fact. This has not been brought about by manipulation, but is the logical outcome of what is very close to an Iron famine, so close, indeed, that we may yet have a touch of it before there is any substantial relief. As a matter of fact, Iron is being taken for six to nine months' deliveries at the highest prices recorded during the past 18 years. Ores and fuel seem as though they would make the cost of Pig Iron at least $18 to $20 at furnace, possibly more than that in some cases, and even then it is a question whether sufficient Iron at that price can be made to meet full requirements during the coming year. The entire situation is, in fact, one of the most complicated that the trade have ever had to contend with. On the one hand there is a very reasonable probability of a demand which will exceed even that of the current year, while at the same time it will not be safe to ignore the possibility of some shrinkage. A larger business would, no doubt, involve higher prices than those now ruling, a smaller business would certainly involve a decline, either of which would be a serious matter for those who happen to be on the wrong side. Conditions of this kind are responsible for the disposition to wait developments. It may not be a long wait, but if the shortage is not relieved soon, it should cause no surprise to see a further upward movement, as there is a wholesome (or possibly unwholesome) fear of being short of Iron. Prices during the last day or two have moved up to very close to $24 for No. 2 X Foundry, in some cases that figure has been exceeded; as a matter of fact $25 has ben paid for some brands, but $23.50 to $24.50 would probably be a fair average of to-day's market. There is naturally a diversity of views in times like these, consequently prices have a much wider range than they had in the times when 15 to 25 cents was considered a pretty fair movement. The range of prices at this time is about as follows for Philadelphia nd its equivalent: No. 1 X Foundry, $25 to $25.50; No. 2 X Foundry, $23.75 to $24.25; Uo. 2 Plain, $22.50 to $23; Standard Mill Iron, $20 to $20.50; Basic, $23.25 to $23.50; Bessemer, nominal, $25 to $26; Low Phosphorus, $27.50 to $28.

Muck Bars.—The market is extremely dull, and prices are again lower. The demand for Skelp Iron has dropped away to almost nothing, so that there is a good deal of Muck Iron for sale and very few buyers. Prices are hard to quote, but $30.50 to $31., at seller's mill, is probably a fair average of to-day's market.

Billets.—It is difficult to say anything about Billets, except that there is practically no market at the present time. Steel is wanted in large lots, but buyers are not inclined to pay anything very near to the prices that are asked, but on the other hand sellers show no signs of being willing to take less, consequently both sides are waiting for the other to make the first move. What the final outsome will be it is impossible to say, but in the meanwhile $40 to $40.50 for the first quarter of next year, and $41 to $42 for earlier deliveries is about as near the market as can be given at this time.

Plates.—There is a good demand for Plates, but as there are more candidates for business than there has been for some time, prices are a trifle lower. The mills have a gret deal of work on their books, and there are no fears of any serious falling off in the demand, but to meet new competition prices are about a tenth lower, as follows, for deliveries at seaboard or nearby points: Steel Plates, ¼-inch and thicker, 2.95c. to 3.05c.; Shell, 3.20c. to 3.25c.; Flange, 3.30c.; Fire Box, 3.40c.; Charcoal Iron Plates, C. H. No. 1, 3.15c.; Best Flange, 3.65c.; Fire Box, 4.15c.

Structural Material.—There is a good demand, and there are so many back orders waiting attention that the mills are almost as crowded as ever. Prices are all at more or less of a premium on nominal rates, which are as follows for seaboard or nearby deliveries: Beams and Channels, 15 inches and under, 2.40c.; Angles, 3 to 6 inches, 2.40c.; Zee Bars, 2.40c., f.o.b. Philadelphia; Angle Bulbs and Deck Beams, 2.63c.; Tees, 2.45c.

Bars.—There is a heavy demand, and as a rule prices are very strong, but owing to a falling off in the demand for Skelp, there are more mills running on Bar Iron than ever before. Some of these mills have quoted a shade under the regular association prices, but Bars are so badly wanted that the general situation has not been affected. A great many Bars are still being taken for Western delivery, and in some cases $1 to $2 premium has ben paid to secure prompt shipments. General quotations for delivery at seaboard or nearby points are about as follows: Ordinary Iron, 2.15c. to 2.20c.; Refined Iron, 2.25c. to 2.30c.; Test Iron, 2.35c. to 2.40c.; Steel Bars, 2.50c. to 2.75c.

Sheets.—There is a fair amount of business, but there is no such urgency as was noticeable a few weeks ago. There is plenty of work on hand, however, and mills are likely to be fully employed during the remainder of the year. Prices easy as follows for best makes (Common Sheets two-tenths less): No. 10, 3c. to 3.05c.; No. 14, 3.20c.; No. 16, 3.30c.; Nos. 18-20, 3.40c.; Nos. 21-24, 3.50c.; Noc. 26. 27, 3.60c.; No. 28, 3.70c. to 3.80c.

Old Material.—Prices are very irregular and very high, in some cases the highest figures for many years have been paid during the past week. Sales have been made as high as $28 for No. 1 Railroad Scrap, $19 for Machinery Cast, $15.50 for Wrought Turnings, $14.25 for Cast Borings, $25 for Steel Rails, $22.50 for Melting Steel, and $19 for Light Steel. Bids and offers about as follows for deliveries in buyers' yards at nearby points: Cast Borings, $14 to $14.25; Wrought Turnings, $15 to $15.50; Machinery Cast, $18 to $19; Old Car Wheels, $24 to $24.50; Heavy Steel Scrap, $22 to $22.50; Steel Rails, $24 to $25; Iron Rails, $26 to $28; Choice Yard Scrap, $21 to $22; No. I Railway Scrap, $26 to $28; Iron Axles, $33 to $36; Steel Axles, $30 to $32.

G. W. Nicolls having accepted the position of secretary and treasurer of the Warwick Iron & Steel Company, has withdrawn from the firm of Nicolls, Wheeler & Co. Mifflin Wheeler will continue the business under the firm name of Mifflin Wheeler & Co., with offices as before in the Fidelity Building, Broad, above Arch street.

(*By Telegraph.*)

PHILADELPHIA, PA., November 8, 1899.—There is a better demand for Muck Bars. Sales were made to-day at $31, seller's mill.

The United States Supreme Court, at Pittsburgh, has denied the motion for a writ of certiorari made by the Carnegie Steel Company, Limited, in their suit against the Cambria Iron Company for infringement of the Captain W. R. Jones patent for mixing metals. This ends a long and costly legal battle that was started in 1895, and finally determines that the reservoiring and storing of blast furnace metal until needed for use, such as in the Bessemer process, is open to all manufacturers.

Cleveland.

CLEVELAND, November 6, 1899.

Iron Ore.—The opening of the Ore sales market still holds off, largely by reason of minor causes, such as the absence in Europe of the head of one of the largest producing concerns. Sales of scattering lots have, however, been made at prices ranging all the way from 75 to 100 per cent. over last year's quotations, and the indications are that the entire output will be covered at substantially that advance. The Ore men, while admitting some of the arguments which have been made in favor of conservatism, assert that pretty nearly everybody else in the business has grown rich as a result of the advanced prices of the past year and that they intend to have their share. The conservatives in taking the opposite view place especial emphasis on the fact that it will be well on to July before any of the Ore now contracted will be used. The month of November is, as a rule, devoted largely to the cleaning up of final shipments, but there is every indication that the movement this year will be sufficiently heavy to add very materially to the aggregate output of the season. As far as this year's business is concerned the past week was productive of no results beyond a breaking of the carrying rates all around. A large number of contract vessels were placed on the market, and this with the slump in grain freights resulted in the market falling off. The reduction on the rate from the head of the lakes was 25c., making the present rate $1.50. The Marquette rate fell from $1.60 to $1.40, and the Escanaba rate went down from $1.35 to $1.25. The movement of Ore will, of course, fall off steadily from this time on, and vesselmen are likely to have trouble in maintaining even the present figures. Some of the vessel managers, who for some time past felt that the high rates would not hold through the season, placed their vessels for wild cargoes last month, and the contract Ore that they should have moved in October will be carried this month. Some Ore is still being carried at the top figures, as a number of blocks were covered at $1.75, $1.85 and $2.

Pig Iron.—The activity in the market for all grades of raw material continues with no abatement whatever, and the general trend is as manifestly along the line of higher prices as ever. The quotation of $23 for Foundry No. 1 and $22.50 for Foundry No. 2 may still be taken as fairly conservative prices. Many of the furnaces have booked orders of some size during the past week or two, and thus a very fair proportion are now practically sold up for the first six months of next year. This condition of affairs has led to a prediction in some quarters of the probability of a scramble for material later on. No sales of any magnitude have been reported, either in Charcoal or Gray Forge, and quotations are nominally the same, although the general feeling is unmistakably strong. There is a continuance in fancy prices for the small quantities of Iron which are on the market for delivery during the remainder of this year. There is very little No. 1 Foundry obtainable at any price, and $24 has been paid in some instances for small lots of No. 2 Foundry.

Finished Material.—Notwithstanding the steadily advancing prices of raw material the quotations on almost all grades of Finished Material seem to be pretty nearly stationary. The local agency of one of the large interests has inquiry for a considerable quantity of Ingots, which will be worked off during the first quarter of the new year. Inquiry in all lines has been good. There have been some sales of Structural for local building operations, but there is naturally a lull in this line, it being late for new building operations this autumn and a little too early for estimates on spring work. There has been little doing in the Rail market. Orders have been coming in pretty heavily during the past two weeks for Black Sheets, and the mills now have orders for considerably more of this material than for some time past. The demand for Pipe continues good, but no further advances in prices are anticipated, inasmuch as prices are at present pretty high. The placing of several additional contracts for Steel vessels with great lake shipyards will still further crowd the Plate mills.

Old Material.—The market during the past week has remained stationary, so far as prices are concerned. The demand has been good, and a very fair supply of material has been available to meet it. There has not been a time in several weeks when some particular grade of Scrap was not scarce, but generally speaking the wants of all customers have been supplied with a moderate degree of promptness.

(By Telegraph.)

The meeting of the association to fix Ore prices for 1900 will be held this week, and in all probability none next week. Sales of Ores outside the association continue, one large sale having been made this week at 85 per cent. over last year's prices. The Lake freight market is in bad shape. Ore cargoes are very scarce, and inasmuch as many shippers are not in a position to take tonnage at any figure there is a strong probability that any pressure of tonnage on the market will result in a big slump.

The market for Foundry grades has strengthened materially, and sales have been made this week at $23.50 for No. 1 and $23 for No. 2. There is no inquiry for association Bessemer, and the Iron appears to be pretty well sold up for the first half of next year.

Birmingham.

BIRMINGHAM, ALA., November 6, 1899.

The market the past week was a very satisfactory one, and would have been an active one had the sellers been able to meet the requirements of buyers. There was one sale of a round lot of Gray Forge and Mottled Iron extending into July delivery that literally cleaned up the productive capacity of this market for this grade. The price obtained was $16. For No. 2 Foundry $18 was obtained, and for No. 1 Foundry $19. No. 3 Foundry again brought $17. The sales were very fair. Shipments of Iron have improved, as cars have increased, and we are again making inroads on the stock in yards that has been waiting for transportation. There is more or less talk of increased furnace capacity, and denials, both positive and influential, follow the assertions. So while nothing can be said based on authoritative information there is every indication that preparations are being made for additional furnaces. Just to what extent has not yet leaked out. A combination has been formed that has purchased the Jenifer Furnace with several thousand acres of land attached thereto. It is said to be a combination of home talent and Eastern capital. W. H. Weller of Gadsden, who had Iron interests there, is president of the company, and John E. Ware is secretary. The capacity of the furnace has been rated at 80 to 90 tons, and it will probably be increased. Another mining corporation has been incorporated under the laws of Alabama, to be known as the Iron City Mining Company. Their capital is $15,000, and J. W. McQuinn is secretary and treasurer. They have erected one Ore washer, and will immediately put up another. As evidence of the activity of the mining interest tiffis company have contracted for all their anticipated output up to 1901. J. E. Lacey, an operator who has lately become interested in Ore property near Cave Spring in Georgia, has contracts here for the delivery of 500 tons daily of Brown Ore. The output of the Brown Ore fields at Russelville is absorbed as fast as mined. In no instance, so far, has there been any difficulty in contracting by operators for their anticipated output for months ahead when the quality of the Ore was approved. This has added an element of stability to the business because of the certain market provided, and it is being actively prosecuted. One thing noticeable is the fact that we are gradually increasing the distance to the Ore supply. The reason is that the Ore fields now being utilized are richer in quality and greater in quantity, and have been made more accessible by railroad connections. The cheapness of their working more than compensates for the increased freight rate, and all the modern appliances for efficient mining are being availed of in the operations. Some of these properties are very valuable; and one instance is given where the royalty paid on one lease amounted to $3250 per acre.

There is no change to note in furnace production. No increase is noted and no diminution. They are bending all their energies to the steady continuous output they are now turning out. The question of the starting of the Steel mill is now one of days. This week fire will be lighted under the gas producers and other parts that must be tested. Before the end of the month affairs there will be straightened out, and the announcement made that Birmingham will hereafter fix the price of Steel. The Dimmick Pipe Works will break ground this week for the erection of their works. There is much said of other enterprises in contemplation, and which will probably mature and largely add to our prosperity. No more striking evidence of our prosperity could be cited than the fact that the pay rolls of the district are just double what they were a year ago, and are of necessity bound to increase largely as the various industries being established are completed. The Coal situation continues strong. The average price of the district for run of the mine is $1.25 per ton, and at this basis a market is ready for double the output now mined.

Machinery houses yet complain of their inability to care for prompt business and are largely behind on or-

ders. Boilers and all machinery, except the heavier castings, have largely advanced. But the demand keeps up to and beyond supply.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, November 8, 1899.

(By Telegraph.)

Pig Iron.— The sale of 50,000 tons of Bessemer Pig, referred to in this report last week as having been made at $23.50, Valley, should have read $23, Valley. There have been additional sales of Bessemer Pig as follows: 15,000 tons at $23, 5000 tons at $23.25, 13,500 at $23.50, 7000 tons at the same price, all for next year, deliveries on some running into third quarter, and also 6000 tons for November and December at $24, Valley, equal to $24.75, Pittsburgh. It is claimed that practically the entire output of Bessemer Iron for the first quarter and the greater part of the second quarter is under contract. Gray Forge is quiet and is held at about $20.50, Valley furnace. The price, f.o.b. Pittsburgh, is $21 to $21.25. No. 2 Foundry Iron is a little lower in price and more is being offered. We quote Bessemer Pig $23.50, Valley furnace, for the first half; Gray Forge, $20.50, Valley furnace; No. 2 Foundry, $22.75 to $23; Gray Forge, $21 to $21.25; Bessemer, $24.50 for November and December, all f.o.b. Pittsburgh.

Billets.— A considerable tonnage of Steel has been sold in the past week, most of it for delivery in the first half. We note a sale of 5000 tons of Bessemer Billets at $36.50, delivered, equivalent to about $36, f.o.b. maker's mill, Pittsburgh. Billets are being quoted from $36 to $38, depending on tonnage and deliveries. We note a sale of 4000 tons of open hearth Basic Billets at $52.50, maker's mill, carbons running for 0.45 to 0.50.

Sheet Bars.—The market is very dull and some of the Sheet mills are asking that deliveries of Bars be postponed owing to quietness in the Sheet trade. We quote Bars at about $36, Pittsburgh, but there are reports of sales at lower prices.

Spelter. — The market has again declined sharply. Ores to-day are $4 a ton higher than they were a year ago and Spelter is about $10 a ton cheaper. We quote prime Western grades of Spelter at 4.75c. to 4.80c., Pittsburgh.

(By Mail.)

In the past week there have been sales of Pig Iron, Billets and Finished Material for delivery into next year and at very good prices. The Bessemer Pig Iron sold was at $22.50 to $23, Valley furnace. Billets for next year are reported to have sold in large lots at about $35. We hear of some concessions in prices on certain kinds of Finished Material where tonnage is very large and deliveries run late into next year. It is very evident that any tonnage in Finished Material that is being sold for next year is at lower prices than could be done for this and next month. On certain lines, such as Plates, Sheets, Skelp and Bars, prices are only fairly strong, some of the mills being anxious for tonnage for next year. The usual winter dullness has already commenced in some lines and very little new tonnage is being placed. There is a good deal of nervousness over the whole situation, and while the large sales of Pig Iron, Billets and Rails of a couple of weeks ago have done much to hold up the market, yet it is doubtful if the present range of values can be sustained for any considerable length of time. As already noted, a good deal of business has been done for next year at prices lower than would be accepted for balance of this year.

Ferromanganese.— We quote domestic at $100 in carload lots.

Plates.— Compared with the rush of orders a month or two ago the present situation in the Plate trade is comparatively quiet. A good deal of outdoor work will soon stop and this will materially cut off consumption. However, some of the Plate mills have tonnage enough on their books to take them well into first half of next year. Other mills seem to have sold very little and are seeking business. Most local mills are holding Tank, ¼-inch and heavier, at 2.75c., but outside mills are shading this price. We quote Tank Plate, ¼-inch and heavier, 2.60c. to 2.75c., the lower price being for Plates for next year; Shell, 2.75c. to 2.80c.; Flange, 2.80c. to 2.85c.; Marine, 2.90c. to 3c.; Fire Box, 3c. to 3.75c., depending on quality, f.o.b. maker's mill.

Sheets.— The usual winter dullness seems to have started in the Sheet trade and the market is quiet. There is a good deal of range in prices, some mills quoting considerably lower than others. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, at 3c.; No. 28, 3.05c. to 3.10c. We hear of somewhat lower prices, but if they are being made it is only by a few mills, or by jobbers who have stocks bought at low prices. Prices on Galvanized Sheets are lower, owing to heavy decline in Spelter, and we quote at 75 per cent. off, 15c. freight, in carload lots.

Structural Material.— We have it on very good authority that the bridge deal has gone through and that all details will be fixed up in a day or two. The Pencoyd Iron Works of the A. & P. Roberts Company have been bought outright for cash. A good deal of work is being placed, considerable tonnage for Mexico having been recently given out. **Both local mills are well filled up.** The Beam meeting, which was to have been held last week, has been postponed. When it is held the question of the relations of the Beam mills toward the new American Bridge Company will be considered. We quote: Beams and Channels, 15-inch and under, 2.25c.; 18, 20 and 24 inch, 2.35c.; Angles, 3-inch and up to 6 x 6, 2.25c.; Angles, under 3-inch, 2.50c.; Tees, 3-inch and larger, 2.30c.; under 3-inch, 2.50c.; Zees, 3-inch and larger, 2.25c.; Grooved Rolled Plates, 2.75c., Pittsburgh.

Rails.— Considerable tonnage is reported to be in the market on which Western mills are figuring. We quote at $35 to $37 for Standard Rails, at mill.

Bars.—As noted last week, there is a wide range in prices on both Iron and Steel Bars. Pittsburgh mills are filled up for the next three or four months and are holding both Iron and Steel Bars at 2.50c., at mill. Some sellers outside the Pittsburgh district who are not so well filled up are naming lower prices, and have sold Steel Bars in this market at about 2.30c. and Common Iron Bars a little lower. We quote Common Iron Bars at 2.20c. to 2.30c. and Refined Iron Bars at 2.50c., at mill. We quote Steel Bars from outside mills at 2.30c., Pittsburgh, while local mills are holding firm at 2.50c. All these quotations are 30 days net cash.

Merchant Steel.—Trade is quiet, but the mills are pretty well filled up on old contracts. Some mills are making concessions in prices, evidently being anxious to book tonnage. We quote: Toe Calk, 2.75c. to 2.85c.; Machinery, 3c.: Tire, 2.75c.; Open Hearth Spring, 3.25c. to 3.50c.; Open Hearth Crucible, 3.50c. to 3.75c.; Sleigh Shoe, 2.75c. to 3c.; Plow Slabs, 3-16 and heavier, 2.75c.; Tool Steel, 7c. and upward, depending on quality and freight allowance. Terms 30 days, except Tool Steel, on which 60 days are allowed, 2 per cent. cash in 10 days.

Pipes and Tubes.— We can report a continued good demand for Pipe, with the mills well filled up with tonnage. Some mills, however, are catching up with orders and are making better deliveries than some time since. We quote Black and Galvanized Merchant Pipe at 50 and two 10's, delivered, in carload lots. Demand for Casing is light. On November 1 prices were changed, and we now quote Screw and Socket Joint Weld Casing at 37½ per cent.; Inserted Joint, 32½ per cent., with an optional 5 per cent. to dealers. There is a continued large demand for Boiler Tubes and the market is very strong. We quote: 1¼-inch and 1½-inch Iron, 40 per cent.; Steel, 40 per cent.; 1¾ to 2½ inch Iron, 50 per cent.; Steel, 55 per cent.; 2¾-inch and larger Iron, 52½ per cent.; Steel, 55 per cent., with an extra 5 per cent. in carloads; less than carloads, f.o.b. maker's mill, Pittsburgh, while carloads are delivered within certain specified territory.

Skelp. — The Skelp market is dull and prices are weak. We quote Grooved Iron and Steel Skelp at 2c. for ordinary widths and Sheared Iron and Steel Skelp at 2.40c. to 2.45c., delivered at buyer's mill. Some mills are quoting higher prices than these.

Connellsville Coke.—Last month the H. C. Frick Coke Company shipped 35,266 cars of Furnace, Foundry and Connellsville Coke, the largest month's business in the history of that concern. We can state that some contracts for strictly Connellsville Furnace Coke, running all through next year, have been placed at a price somewhat under $2.75, at oven. Some large contracts for Coke for next year are pending and will likely be closed up in the next couple of days. There is a good deal of inquiry for Foundry Coke and we quote strictly Connellsville at $2.75 to $3 a ton, at oven. Last week there were 18,236 ovens in the Connellsville region active and 873 idle, the output being 192,364 tons. The supply of cars last week was a little better than for several weeks previous.

Iron and Steel Scrap.—The Scrap market, like everything else, is somewhat quiet just now, none of the large consumers being in the market. Prices on Iron and Steel Rails, Wrought Scrap and certain other lines are lower. We quote Old Iron Rails at $28 to $29; Steel Rails, mixed lengths, $22 to $23; short pieces, $23 to $24; No. 1 Wrought Scrap is quiet, but is probably worth $22 to $23. There is so little doing in Scrap just now that it is difficult to gauge the market.

St. Louis. (*By Telegraph.*)

Office of *The Iron Age*, 512 Commercial Building, St. Louis, November 8, 1899.

Pig Iron.—The trade report a good demand this week, the usual call for shipments being received. Buyers are hard pressed in some instances through failure to receive Pig Iron on running contract and are forced to pick up what they can to keep going. It is known that immediate shipments are being asked for on account of purchases made for 1900, but it is doubtful whether requests of this nature can be given satisfaction. Furnaces are almost to a unit sold up for the remaining weeks of this year. Occasionally a furnace is reported about to be put in blast, and this week reports the Napier Furnace as coming in. No weak spots are felt, as many large buyers are making active inquiry as the conviction grows that but little spare Iron will be had next year. Modest purchases are being made right along, and it is plain that wants for this year were not fully anticipated. Not only does this apply to factors who have exhibited extreme reticence to buy on the past and present markets, but the unusual call on stove and jobbing founders has drawn on stock liberally laid in. The Coke situation is still acute and scanty shipments are going forward. It is difficult to state whether relief will soon be had. Prices are stiffening up and to-day's figures are as follows: Connellsville Coke, $5.75; Stonega, $5.50; Pocahontas, $5.25, East St. Louis. No changes have occurred in Pig Iron prices, but in figuring for approximate prices to points near St. Louis and in Central Traffic territory 20c. must be added to figures below. We quote, f.o.b. St. Louis:

Southern, No. 1 Foundry	$22.25 to $22.50
Southern, No. 2 Foundry	21.25 to 21.50
Southern, No. 3 Foundry	20.25 to 20.50
No. 1 Soft	22.25 to 22.50
No. 2 Soft	21.25 to 21.50
Gray Forge	20.00 to 20.25

Bars.—Mills seem to be filling up with orders from large buyers. It is well known that heavy orders have been placed by railroads for rolling stock and that involves an immense amount of material, whether taken out of immediate stock or contracted for. It is hardly possible than any careful concern would consume its stock and not provide a new supply. Additional orders to mills may, therefore, be looked for. Jobbers and smaller consumers are not so active in purchasing to-day, but no unusual slackening is seen on any hand. Quotations for Iron Bars in carload lots are from 2.35c. to 2.50c., half extras, East St. Louis. Jobbers' price is 2.75c., base, full extras. Steel Bars are nominally 2.50c. to 2.70c., base, half extras; 3c., base, full extras, is jobbers' price out of stock.

Rails and Track Fastenings.—Nothing unusual transpired during the week in Track Fastenings, and prices show no change. We quote: Splice Bars, Steel, 2.55c.; Iron, 3c. to 3.50c.; Track Bolts, with Square Nuts, are now 3.65c.; with Hexagon Nuts, 3.90c.; Spikes, 2.85c.; Steel Links and Pins, 3.20c.

Pig Lead.—The market is inactive and listless. Soft Missouri is bid for at 4.45c., and Chemical 4.47½c. Lead Ore recovered its 50c. loss and is again $27 per 1000 lbs.

Spelter.—Further declines have taken place and the bottom not yet in sight. Practically nothing doing, and offerings made to sell at 4.65c. Sales might be effected at 4.60c., but for small lots only. Forty dollars was the top price for Zinc Ore, but it is claimed that regular purchases were made considerably under that. The inability to receive Coal is proving a setback to some of the Ore miners. Coal operators state that ready sale could be found for additional output, but Coal miners' differences hamper production.

The Chattanooga Pipe & Foundry Company is the title of a new concern incorporated with a capital of $50,000 to erect a Cast Iron Soil Pipe plant at South Chattanooga, Tenn. The incorporators are J. F. Casey, Charles Reif, M. M. Hedges, George Reif, Jr., and Robert Pritchard. The plant will be erected on a plot of ground adjoining the boiler works of Casey & Hedges, which firm will take the active management of the enterprise.

Cincinnati. (*By Telegraph.*)

Office of *The Iron Age*, Fifth and Main streets, Cincinnati, November 8, 1899.

The general condition of the market has not changed materially during the past week. Business has been much more satisfactory, both as to volume and character, than it was during the few preceding weeks. There have been a few orders placed for amounts as large as 1000 tons, with quite a sprinkling of 300-ton lots, and ranging from that to single carloads. The buying is almost altogether from the smaller consumers, and the opinion here is that this is the beginning of a good strong movement from the smaller foundries who have for one cause or another neglected to cover for the first half of next year. A few of the larger buyers are asking quotations, but so far these have been productive of but little active business. One buyer in a lake city sent out inquiries aggregating 30,000 tons, and only bought about 4000 tons, much to the disappointment of the large number of salesmen who responded to the inquiry, this being the largest transaction of the week. The only disagreeable feature in the entire situation is the shortage of cars, which, as the weeks go by, grows to be more acute. The outlook for the next week is good, and a strong market is confidently expected. The price-list is practically unchanged, though there is still some Iron offering at less than quotations by a few furnaces who did not respond to the last advance. On the whole, however, prices are more regular, with the single exception of Gray Forge, which is quoted on the basis of $15.75 to $16.25, Birmingham. It is claimed that some No. 3 Southern Foundry has been selling as low as $16, and in one particular transaction Gray Forge is said to have gone a trifle lower than $15.75, and a spot sale of No. 2 Southern Foundry is quoted at $17.50. Northern Irons are very strong at quotations. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$21.75
Southern Coke, No. 2	20.75
Southern Coke, No. 3	19.75
Southern Coke, No. 4	19.50
Southern Coke, No. 1 Soft	21.75
Southern Coke, No. 2 Soft	20.75
Southern Coke, Gray Forge	$19.00 to 19.50
Southern Coke, Mottled	19.25 to 19.50
Ohio Silvery, No. 1	30.00
Ohio Silvery, No. 2	29.00
Lake Superior Coke, No. 1	$23.50 to 24.00
Lake Superior Coke, No. 2	22.50 to 23.00

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, Chilling Grades	$24.75
Standard Southern Car Wheel, No. 2	23.75
Lake Superior Car Wheel and Malleable	25.00

Plates and Bars.—With no change from last week's quotations the market is strong and exceedingly satisfactory from all points of view, except that there is some complaint in regard to delivery on old orders. We quote, f.o.b. Cincinnati: Iron Bars, carload lots, 2.25c., with half extras; small lots, 2.60c., with full extras; Bar Steel, in car lots, 2.50c., with half extras; small lots, 2.95c., with full extras; Iron Bar Angles, 1½ x 3-16 inch and larger, in car lots, 2.65c.; small lots, 2.80c.; Sheets, No. 10, 3.15c.; No. 27, Stove Pipe, 3.25c.; No. 27, Steel, 3.35c.; Plates, 3c. to 3.10c.

Old Material.—With the exception of a little more strength in No. 1 Scrap, the market is practically unchanged. There has been a fair run of business, and the outlook for its continuation is good. We quote, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, $22 to $23 per net ton; Cast Scrap, $15.50 to $16 per gross ton; Axles, $26 to $27 per net ton; Iron Rails, $28 to $29 per gross ton; Car Wheels, $20 to $21 per gross ton.

New York.

Office of *The Iron Age*, 232-238 William street, New York, November 8, 1899.

Pig Iron.—One of the leading melters in this district has taken a considerable quantity of Pig Iron, selecting both Northern and Virginia brands, the purchases aggregating about 8500 tons at the market with further negotiations pending. All of the Iron was for delivery during the first half of 1900. Another large consumer in the Albany district has closed for large lots for delivery during the second half of 1900. Prices are higher and may now be quoted: Lehigh and Schuylkill Irons, for 1900 delivery, No. 1 Foundry, $25 to $25.25; No. 2 X, $23.75 to $24; No. 2 Plain, $22.25 to $22.75, and Gray Forge, $19.75 to $20. Southern brands are quoted: No. 1 Foundry, $24 to $24.50; No. 2 Foundry, $22.25 to $22.50; No. 1 Soft, $22 to $22.25; No. 2 Soft, $21 to $21.25; No. 3 Foundry, $20.75 to $21.75, and Gray Forge, $20.25 to $20.50.

Cast Iron Pipe.—No business of magnitude is coming up. As an instance how present prices are affecting buyers, the fact is mentioned that a large Southern city is considering the question of putting down a wooden

line, like those used in the Rocky Mountain region, for conveying water. The projected line is to be about 20 miles in length.

Steel Rails. — The market has quieted down a good deal. Reports have it that the total tonnage on the books at the present time is really larger than any of he figures named at the time when the contracts were closed. We continue to quote $35 to $37 for Standard Sections, 2.30c. to 2.50c. for Angle Bars and 2.65c. to 2.75c. for Spikes.

Finished Iron and Steel.— The largest individual order which has come up is that for the buildings of the Brooklyn Navy Yard. The bids have been opened, but as yet the award has not been made. The market has eased off a little on Plates. We quote: Beams, 2.40c. to 2.50c.; Angles. 2.40c. to 2.45c.; Universal Mill Plates, 2.65c. to 2.75c.; Tees, 2.40c. to 2.45c.; Channels, 2.40c. to 2.50c.; Steel Plates are 2.95c. to 3.10c. for Tank, 3.10c. to 3.25c. for Shell. 3.30c. to 3.40c. for Flange, 3.40c. to 3.55c. for Fire Box, 3.75c. to 4c. for Locomotive Fire Box, on dock. Charcoal Iron Plates are 3.15c. for C. H. No. 1. 3.65c. for Best Flange and 4.15c. for Fire Box. Refined Bars are 2.20c. to 2.25c. and Common Bars are 2c. to 2.10c., on dock. Soft Steel Bars, 2.50c. to 2.55c.; Hoops, 2.75c., base, delivered.

Merchant Pipe.—Quotations on Merchant Pipe in carloads are 50, 10 and 10 per cent. discount, delivered, and in less than carloads 50 and 10 per cent., f.o.b. maker's mill. On Casing the figures are: For carload lots, S. and S. Joint, 37½ per cent., and Inserted Joint, 32½ per cent.; for less than carload lots, S. and S. Joint, 32½ per cent., and for Inserted Joint, 27½ per cent., less 5 per cent. to jobbers, the prices for carload lots being delivered and for less than carload lots f.o.b. mill. On Boiler Tubes, 1¾ to 2½ inch, the prices are 55 per cent. off on Steel and 50 per cent. on Iron; for Boiler Tubes 2¾-inch and larger, 55 per cent. on Steel and 52½ per cent. on Iron, all subject to 5 per cent. on car lots, the prices for carload lots being delivered and on less than carload lots f.o.b. mill.

The announcement is made that the limited partnership lately subsisting between Theodore C. Wallace, John B. Carss and John H. Palmer, as general partners, and Charles W. Ogden, as special partner, under the firm name of Ogden & Wallace, has been dissolved by mutual consent in consequence of the ill health of Theodore C. Wallace, and that the accounts of the firm will be settled and the business thereof continued by the limited partnership of Ogden & Wallace, which has been formed consisting of John B. Carss and John H. Palmer, as general partners and Charles W. Ogden, as special partner.

Metal Market.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, November 8, 1899.

Pig Tin.—The market has been weak and very little demand has shown itself. Spot is freely offered at 30c., and bids of 29¾c. were made to-day for small lots. The London market has gradually declined and to-day's closing saw quotations £2 5s. lower than they were a week ago. Spot was quoted £138 flat and three months' futures' were £137 5s. The monthly Billiton sale went at a very low figure to-day, equalling about £133 10s., c.i.f. Holland. The statistics which we give below show that the visible supply on November 1 was 18,156 tons. As deliveries are falling off, the outlook for the next two months seems to indicate that we shall close the year with about the same visible supply that we had last year —viz., 20,131 tons. It might be well to mention in this connection that at that time the price in London was £86 1s. 3d. and 18.95c. in New York.

Below we give the total statistics for Europe and the United States, as compiled by the New York Metal Exchange, showing:

	Tons.
Total visible supply November 1, 1899	18,156
Against visible supply October 1, 1899	18,870
Against visible supply November 1, 1898	22,918

The total visible supply on November 1 is 4762 tons below that of November 1 of last year.

	Tons.
Arrivals at the Atlantic ports amounted to	1,800
Total arrivals since January 1, 1899	28,173
Of which from Straits by direct steamers	15,750
Of which from United Kingdom	11,015
Of which from Holland	1,183
Of which from European Continent	225
The deliveries for October we estimate at	2,400
Total deliveries since January, 1899	26,300
The shipments from Straits amounted to	3,900
Against previous month	4,200
Against October, 1898	4,275
Australia shipped	330
Against previous month	300
Against October, 1898	200

Statistics for the United States—Pacific ports excluded—November 1, 1899, show as follows:

Stocks, including landing	3,673
Afloat	2,384
Total	6,057

Copper.— Is unchanged. Lake Superior Ingot is still quoted 17c., Electrolytic 16⅞c. to 17c., and Casting the same as the latter. But business is just as dull now, if not worse than when Lake was 18½c. The London market has been manipulated in the interests of Copper stocks, and, while it was up to £74 15s., it closed to-day £74 7s. 6d. for spot and £74 for three months' futures. Best Selected comes to-day at £79 10s.

Exports increased considerably during the month of October, but the total for the ten months is still 19,989 tons below last year.

The exports of domestic Copper from New York and Baltimore for the month of October, as per official returns, and compiled by the New York Metal Exchange, were as follows:

	Tons.
From New York	6,957
From Baltimore	3,243
Total	10,200

During the same month the following arrived at New York and Baltimore:

	Tons.
From Europe	3,113
Mexico	509
Mexico	288
Tilt Cove	10,523
Europe	603
Total exports since January 1, 1899, exclusive of Southern ports for October	86,663
Against same period in 1898	106,652

Pig Lead.—This metal is absolutely stationary. Prices are unchanged, and the market is without life. The American Smelting & Refining Company quote 4.57½c. to 4.60c. for desilverized, New York, and 4.50c., St. Louis. London has experienced a slight decline, and the closing cables come to-day £17 10s.

Spelter.—There has been another most decided slump. The decline brought quotations down to 4¾c., New York, for spot. Futures, it is said, are also obtainable at this price. St. Louis is also dull, and quoted 4.60c. nominal. Sales, it is said, were made as low as 4.40c. London has declined 5 shillings to £21 5s. There is talk of $38 Ore, but we are not advised that this has been decided upon by the miners.

Antimony — Cookson's has gone off a shade, and is now quoted 10½c. to 11c. Hallett's is unchanged at 9¾c.

Nickel.—Has been advanced several points, and is quoted to-day 40c. to 45c., according to quantity and delivery.

Tin Plates.—The market is without change, and the American Tin Plate Company's prices are still $4.82½ to $4.87½ per box for 100-lb. Cokes, New York. It is reported that the executive offices of the American Company will be removed to New York from Chicago at the same time of the removal of the American Steel Hoop Company and the National Steel Company.

Aluminum Tubing.— The Elwood Ivins Tube Company of 487 Broadway and Oak Lane Station, Philadelphia, announce that they will shortly issue a price-list of aluminum tubing which will put the latter, foot for foot, on a par with tubing made of copper.

In his annual report United States Treasurer Roberts declares that a notable activity was exhibited in all kinds of currency in the past year, with a marked increase in the use of gold coin. The net ordinary expenditures from the Treasury were a little over $605,000,000, an amount only exceeded twice, in 1863 and 1864, while the total ordinary receipts were $515,960,620, leaving a deficiency in the ordinary revenues of $89,111,559. The effect of the new revenue laws is shown in the receipts for the year, in which there was an increase over 1898 of $56,553,419 from customs and $102,536,520 from internal revenue.

The decreased pressure of natural gas in the Indiana field is beginning to cause serious inconvenience in many quarters. Last week the Fort Wayne Gas Company, at Fort Wayne, Ind., controlled by the Dietrich syndicate, notified all their consumers that the recent cold snap indicated that they could not furnish a sufficient amount of natural gas for fuel purposes during the coming winter. All consumers have been advised to lay in coal and wood to be used if necessary, and all factories, office buildings and hotels using gas under their boilers were notified that the supply will be cut off on November 10, in order to protect private consumers and homes.

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING NOVEMBER 8, 1899.

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday
$29,000,000	Am. Car & Foundry, Common..	2,900	17 -17⅛	17¼-17⅝	17⅝-17⅞	-17⅛	.....	17¼-17½
29,000,000	Am. Car & F'y, Pref.(7% Non-Cu.)	2,640	63⅛-63⅝	63 -63⅝	62½-63	-63	.....	-63½
19,000,000	Am. Steel Hoop, Common.....	11,965	42⅝-43	42¾-43⅛	43 -43¼	42 -43	.....	43¼-44⅛
14,000,000	Am. Steel Hoop, Pref. (7 % Cu.).	2,910	-82¼	-82⅝	82¼-83	82⅛-82¼	.....	82½-83⅛
50,000,000	Am. S. & W., Common.....	45,272	47⅝-49¼	47¼-48⅛	47 -48⅝	46 -47⅛	.....	47⅝-49⅛
40,000,000	Am. S. & W., Pref. (7 % Cu.)....	2,223	93⅛-94⅛	93⅛-93⅝	-93⅛	-94	.....	94 -94¼
28,000,000	Am. Tin Plate, Common, N. Y..	3,755	34½-34⅝	33⅝-34½	.....	31⅞-33	.....	33¼-34
18,000,000	Am.Tin Plate, Pref.,N.Y.(7% Cu.)	1,222	83¾-84	-83	-83	-82	.....	-82
28,000,000	Am. Tin Plate, Com., Chic.....	527	-34⅛	34 -35	.....	32¾-33	.....	33⅝-34¼
18,000,000	Am.Tin Plate,Pref.,Chic.(7% Cu.)	838	82 -83½	82½-83¼	.....	82 -83	83 -83¼	83 -84
7,500,000	Bethlehem Iron†	80	-60¼	.....	.....	-60¼	.....	-60½
15,000,000	Beth. Steel, Par $50, $1 paid in.	1,516	19⅝-20	20 -20⅝	-20	-20	.....	.....
7,974,550	Cambria Iron, Phila*.....	41	-44½	-44½	-44¼	....	.....	-44
16,000,000	Cambria, Steel**.....	10,590	21½-21¼	22 -22¾	21 -21⅞	20⅝-21⅝	.....	21 -21⅝
11,000,000	Col. Fuel and Iron.....	15,720	53¾-57¼	56 -57½	55¼-56½	54⅛-56	.....	55⅛-56¼
46,484,300	Federal Steel, Common.....	88,525	58¾-60½	58⅛-59⅞	58 -59⅝	57⅛-58⅞	.....	57⅛-59⅝
53,253,500	Federal Steel, Pref. (6% Non-Cu.)	15,485	80 -81⅞	81 -81¾	80⅝-81¼	79⅛-79⅞	.....	79 -80¾
32,000,000	National Steel, Common, Chic..	1,600	48¾-49¼	48⅝-49¼	.....	48¼-49	48⅛-48¼	48¾-49¼
27,000,000	National Steel,Pref.,Chic.(7% Cu)	200	-93¾	.....	-94¾	-95	.....	-95
32,000,000	National Steel, Common, N. Y..	2,927	48⅛-49¼	49 -49¼	-48¾	48⅛-49	.....	49 -49¾
27,000,000	Nat'l Steel, Pref., N. Y., (7 % Cu.)	2,665	-94	94 -94⅛	.....	-94½	.....	94⅛-94⅝
5,000,000	Penna., Common, Phila.....	490	-75	77 -79	-75	.....	.....	.....
1,500,000	Penna., Pref., Phila.....	103	.....	.....	.....	.....	.....	.....
12,500,000	Pressed Steel, Common.....	580	-58¼	-58⅞	.....	-58	.....	.....
12,500,000	Pressed Steel, Pref. (7 % Non-Cu.)	512	.....	-89¾	-89	....	.....	-89½
27,352,000	Republic Iron & Steel, Common.	2,375	25¼-26	25¼-25⅞	24¾-25¾	24¼-25⅛	.....	-26
20,852,000	Repub. Iron & Steel, Pref. (7% Cu.)	3,212	70 -70¼	69¾-70	.....	69 -69¾	.....	69¾-70¼
20,000,000	Tennessee Coal and Iron.....	12,170	118⅝-119⅛	118 -119¼	118 -119	116⅝-118	.....	117 -119
1,500,000	Warwick Iron & Steel, (par $10)	103	11	-11	.....	10⅞-11	.....	.....

* Par $50. ** $1.50 per share paid in. † 6 % guaranteed by Beth. Steel Co. Late Philadelphia and Chicago sales by telegraph.

Bonded Indebtedness: Am. S. & W., $130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., $2,000,000 6% debenture 20-year bonds, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., $13,200,000 Illinois 5 %, $7,417,000 E. J. E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R. 5 %, $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel, $2,561,000 6 %; Tennessee C., I. & R. R. Co., $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 Steelton 1st; $2,000,000 Sparrow's Point 1st, $4,000,000 consolidated, both plants; Bethlehem Iron, $1,351,000 5 % maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none. Colorado Fuel & Iron Co.: Col. Fuel Co. Gen Mort 6 % $880,000; Col. Coal & Iron Con. Mort. 6 % $2,810,000; Col. Fuel & Iron Gen. Mort. 5 % $2,3(3,000. Also outstanding $2,000,000 preferred stock with accumulated dividends of $640,000 to June 30, 1899.

Iron and Industrial Stocks.

American Steel & Wire and Federal Steel have again been the features, there being some uneasiness in the former due to rumors of differences in the management. At the close the majority of the active stocks have rallied. The feeling is growing that with easy money there will be a return of activity, with an upward tendency in values.

	Bid.	Asked.
International Silver, Common	14¾	15
Otis Elevator, Common	29½	30½
Otis Elevator, Preferred	92	94
H. R. Worthington, Preferred	109	110
Cramp's Shipyard Stock	68	78
Pratt & Whitney, Common	3½	5
Pratt & Whitney, Preferred	50	54
E. W. Bliss, Common	132	...
E. W. Bliss, Preferred	125	...
U. S. Projectile	95	100
Barney & Smith Car, Common	21	25
Barney & Smith Car, Preferred	79	81
International Pump, Common	20	22
International Pump, Preferred	70	72
Sloss & Sheffield Steel & Iron, Common	35	40
Sloss & Sheffield Steel & Iron, Preferred	77	78
National Tube, Subscriptions, Common	45	45½
National Tube, Subscriptions, Preferred	97¼	97¾
American Bicycle Company, Common	25	27
American Bicycle Company, Preferred	64½	...
American Bicycle Company, Bonds	89	90½

The payments for the properties acquired by the Sheffield-Sloss Steel & Iron Company are being made to-day, and the organization will be perfected in a few days.

The Shelby Iron Company of Shelby, Ala., have declared a dividend of 5 per cent. on their capital stock. The company are capitalized at $1,000,000. Last spring they paid 8 per cent. dividend on the stock.

A second instalment of $2.50 per share, or 25 per cent., has been called on the preferred stock of the Cuban Steel Ore Company, payable December 1 at the Investment Company of Philadelphia.

The American Radiator Company have declared a dividend of 1¾ per cent., payable November 15. Books close November 11 and reopen Nov. 15.

The People's Natural Gas Company of Pittsburgh have declared the regular quarterly dividend of 1½ per cent., payable November 25.

The proposed increase in the capital of the Pittsburgh Terra Cotta Lumber Company of Pittsburgh contemplates an issue of $1,000,000 7 per cent. cumulative preferred stock and $1,000,000 common. The present holders of the $300,000 may exchange same for $300,000 new preferred and have the privilege to take as much common at $5 a share. The underwriting stockholders will be offered $500,000 preferred and as much common at $5 a share.

The stockholders of the Manufacturers' Natural Gas Company of Pittsburgh have voted to increase the capital stock of the company from $600,000 to $1,500,000, and to create a bonded indebtedness of $750,000, the proceeds to be used in paying for the recently acquired People's Heat & Light Company of Washington and to acquire other plants.

The annual report of the Duluth & Iron Range Railway was filed on November 1. The funded debt is $12,234,000, on which $610,250 was paid during the year. For the year ending June 30, 1899, the total income was $1,674,831 and net income $976,464; surplus, $1,648,145; surplus June 30, 1898, $671,681.

The net earnings of the National Tube Company are reported to be fully $1,000,000 a month. At the time the consolidation was made about $800,000 a month was calculated as about the proper figure in net earnings.

At a meeting of the directors of the United States Cast Iron Pipe & Foundry Company, held at the offices of the company, 80 Broadway, last week, a quarterly dividend of 1¾ per cent. was declared on the preferred stock.

Following is the balance sheet of the company as of September 30:

ASSETS.

Treasury stock	$5,344,555
Investment	24,053,129
Cash	274,197
Bills receivable	25,909
Inventory raw and unmanufactured material	1,432,724
Accounts receivable	1,655,654
Total	$32,786,168

LIABILITIES.

Preferred stock	$15,000,000	
Common stock	15,000,000	
Bonds of American Pipe & Foundry Company	1,199,000	
Anniston Mortgage Bonds	140,000	
Bills and accounts payable	850,174	
Amount set aside to pay interest on bonds	20,785	
		$32,209,959
Balance now at credit of profit and loss account		$576,209

The fire loss returns of the United States for the month of October maintained the record of this year as one of exceptionally heavy losses in that line. According to the New York *Journal of Commerce's* compilation, it reached a total of $12,046,250, being slightly less than the record of the previous month, but $4,500,000 above the loss of October, 1898. The record for the first ten months of the current year is $111,654,900, which is about $15,000,000 ahead of the fire loss in the corresponding period of 1898 and more than $20,000,000 above that of the first ten months of 1897.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street, }
NEW YORK, November 8, 1899. }

Throughout all the jumping of prices and advancing tendency of the market of late two prominent machine tool builders held aloof, and, instead of joining in the procession and pushing values upward they allowed their list on a certain line to remain unmolested. Demand in the line of machines referred to was excellent and they were growing scarcer every week, but neither concern would advance and down the prices stayed. We hear now that both these concerns have sent their prices upward and milling machines are no longer an exception to the rule. The two companies are the Brown & Sharpe Mfg. Company and the Cincinnati Milling Machine Company. In the instance of Brown & Sharpe, we understand, the advance applies to their entire line of machine tools as well as milling machines, but not their small tools, gauges, &c. It is said that they advanced on their gear cutting machines some three months ago and that in the recent redesigning of their grinders they revised the price-list. We are informed that the rumor circulated in the trade several weeks ago to the effect that the Cincinnati Milling Machine Company had advanced 5 per cent. was incorrect at that time. The advance made by these two companies is the first made by these concerns since the launching of the present boom. It is said that no change has been made as yet by either concern in their prices for the export trade.

A substantial advance has been made during the last week by the Fifield Tool Company. This is the second recent increase of this company's prices.

The Betis Machine Tool Company and the Putnam Machine Company have also advanced within the last few days.

There is no apparent let up of the pressure on the builders of planers, especially the larger sizes. A firm who swing a large portion of the machine tool business of Continental Europe and who have an office in this city have just been advised at their New York office from Berlin that the G. A. Gray Company made another advance. This, we understand, is the fourth change in the list of this concern and is the same which went into effect about a month ago here. This company, it is said, have orders booked ahead from eight months to a year.

To our knowledge one machine tool builder in this district has been trying to get planers for several months. Being unable to get them, it was found necessary to operate the planers which are at the shop all night. The planer gangs in this shop are running 24 hours a day, while other departments are keeping up with but ten hours' work.

We are informed that a prominent company in the metropolitan district who build electric generators and motors are laying off many men, telling them that their reason is that, owing to the increased cost of material, they cannot afford to build the apparatus and compete with the other builders in the market at present prices. They are evidently of the opinion also that present prices of raw material will not last long enough to warrant the laying in of a stock.

In our issue of two weeks ago we mentioned the fact that the Chicago Pneumatic Tool Company of 120 Liberty street were in the market for a fair sized equipment of machine tools. We understand now that these tools were for installation in a new shop which is being built at Arlington, N. J., by the New York Air Compressor Company, who are very closely identified with the Chicago Pneumatic Tool Company. The New York Air Compressor Company succeed the company formerly known as the Pneumatic Supply & Equipment Company. It is intended to manufacture a complete line of air compressing machinery at the new plant. Only one-third of the machinery equipment was purchased in the recent transaction. The officers of the new company are: J. W. Duntley, president; Alexander MacKay, vice-president, and W. P. Pressinger, secretary and treasurer. The directors are J. W. Duntley, Alexander MacKay, W. P. Pressinger, William B. Albright, W. O. Duntley, Thomas Aldcorn and Austin E. Pressinger. The New York offices of the concern are at 120 Liberty street.

Considerable machinery has been purchased lately in this market by the Aultman Taylor Machinery Company of Mansfield, Ohio, builders of the Cahall boilers. This machinery will be utilized in the equipment of an addition which this company are building to their plant. The addition will increase the plant by half, although through rearrangement of the shops the output of the plant will be increased 100 per cent.

F. W. Horne of Yokohama, Japan, who is in the city, making his headquarters with W. J. Kingsland, 35 South William street, has just concluded purchases for the equipment of a railroad machine shop, which will be built in Japan. It is said that he purchased a fair sized list of machine tools. The A. & F. Brown Company of Elizabethport and 35 Dey street were awarded a good contract for power transmission machinery for this shop.

Word has reached here to the effect that J. H. Sullivan and G. E. Gould are receivers for the Florence Machine Company of Florence, Mass. This concern are builders of engines, chucking and tap threading lathes.

An addition will be built to the plant of the E. J. Ross silk mill, located at Port Oram, N. J.

The American Beet Sugar Company, who have absorbed a number of the largest beet sugar plants of the West, have just placed an order with the A. & F. Brown Company for about $23,000 worth of power transmission machinery. The machinery will be placed in several of the company's plants, principally in California.

The New Britain Machine Company of New Britain, Conn., have received from the Frank A. Pierce Engineering Company of 26 Cortlandt street an order for 20 Case automatic high speed engines. The engines will be shipped to London. The Frank A. Pierce Company have also received an order from the Johnstown, Pa., Electric Street Railway Company for two 750 horse-power Corliss engines.

Woolston & Brew of 141 Broadway were awarded the contract for the engine plant, which the Seamless Metal Ware Company of Sing Sing, N. Y., will install. The former company also were awarded a contract from C. O. Mailloux, consulting engineer, for two 100 horse-power Brown engines, to be installed in the Leggett Building, Brooklyn, N. Y. They will be direct connected Western Electric generators.

The Cohannet Milling Company of Taunton, Mass., are said to be in the market for a low pressure side to their 450 horse-power engines.

Burhan & Granger of 95 Liberty street received the contract for the 125-foot steel self supporting stack for the Mount Prospect Pumping Station, Brooklyn, N. Y.

An addition is being built to the forge shop of the Benjamin Atha & Illingsworth Steel Works of Harrison, N. J. A crucible furnace will also be built.

The order for the cranes to be used in the new power station, being built at Glasgow, Scotland, under the direction of the Glasgow City Council, did not leave Great Britain. The contract was awarded to the Clayton Mfg. Company of Manchester. The prices were £4260 for the two 50-ton and £1350 each for the 30-ton.

New Terms of Sale in Eastern Pennsylvania.

After thrashing over the whole matter of selling terms the Eastern Pennsylvania stove manufacturers agreed to a compromise between their former terms and those adopted in the West. The new agreement is that payments are to be made not later than 90 days from actual date of shipment, with 5 per cent. off for payment in 30 days and 2 per cent. off for payment in 60 days, the only forward dating allowed being in July and August, when one-half of the goods may be dated September 1 and the other half October 1. The old terms prevailing in Eastern Pennsylvania were four months.

Information Wanted.—Who manufactures machines for perforating and cutting toilet paper?

Who makes iron or steel bedstead tubing ½ inch and under inside diameter?

The Pittsburgh & Homestead Company of Pittsburgh have been granted a charter with a capital of $300,000. The incorporators are John Walker, Frank J. Torrance, H. Buhl, Jr., Theophilus Sproul, Tobart A. Smith, all of Allegheny; John B. Jackson and Julian Kennedy of Pittsburgh. This concern have been organized to deal in real estate in the Monongahela Valley, and already have large holdings near the Homestead Steel Works of the Carnegie Steel Company.

The People's Natural Gas Company of Pittsburgh have notified consumers that slot machine gas meters will hereafter be furnished to supply gas at the rate or 900 feet, instead of 1000 feet, for 25 cents. This is done in order to permit the increase in price to be worked with automatic meters without necessitating the addition of 2 cents. The company now have about 200 of the meters in use, but are making no effort to extend their use.

In the case of Edwin W. Ohl, receiver of the Duquesne Tube Works Company, against the Union Railroad Company, a verdict of $10,500 was taken by the plaintiff by consent. The suit was one to recover damages for property appropriated by the defendant company.

The Waukegan Wire Mill Burned.

The entire finishing department of the plant of the American Steel & Wire Company at Waukegan, Ill., was burned on the 4th inst. Within an hour after the first alarm was given the flames, driven by a strong wind toward the north, had stretched over a space 1000 feet long and had done enormous damage. Even with an abundant water supply it was impossible to check the direct course of the fire. The buildings still standing include the rolling mill and the warehouse.

The fire was first noticed at 2.40 o'clock in the southeast corner of the wire mill, and is suposed to have been started by the friction of a belt which set fire to the wood work. From the wire mill it passed to the cleaning house, muffle house, tinning house, galvanizing room, engine room, electric light plant and dipping room, all of which were completely destroyed. These buildings were substantial structures, with heavy brick walls, massive columns and girders and thick plank floors. Besides the rolling mill and warehouse the boiler house, pump house and machine shop were saved. The warehouse is situated just west of the galvanizing room at the extreme north end of the plant, and the greatest pains were devoted to protecting it, as it contained a very large and valuable stock of finished products.

No lives were lost in the fire, and there were no serious injuries, but some of the workmen employed in the factory had narrow escapes.

Superintendent Harry Rice, who recently came to Waukegan from Worcester, Mass., took personal charge of the fight against the flames. He expects that the burned buildings will be speedily rebuilt. The plant now belonging to the American Steel & Wire Company is practically a new one, having been put up in 1891 by the Washburn & Moen Company. Since then it had been greatly enlarged and was equipped with the best and latest machinery.

The American Steel & Wire Company has made the following announcement: "Through the daily press you have undoubtedly been advised of the partial destruction by fire of our plant at Waukegan, Ill., Saturday afternoon, November 4. The fire affected particularly the finishing end of the plant, the rolling mill not being damaged in any respect. Our warehouse with a fair stock of goods was also saved. We have already made arrangements for the execution by our other plants of unfilled orders at Waukegan, and desire to assure you that all orders now placed with us which have been lodged at Waukegan for shipment will be taken care of by shipment from other plants with very little, if any, delay; and all future orders will receive our prompt and careful attention as heretofore."

The Bar Iron Scale.— (*By Telegraph.*)—PITTSBURGH, November 8, 1899.—The regular bi-monthly conference between a committee of the Amalgamated Association and James H. Nutt, representing the Valley bar iron mills, most of them owned by the Republic Iron & Steel Company, to fix a wage rate in puddling and finishing mills for November and December, was held in Youngstown, Ohio, on Wednesday, November 8. Statements submitted by the mills to Mr. Nutt showed that the average price on shipments of common bar iron in September and October was slightly above 1.60 cents. Wages, therefore, for this and next month will be based on 1.60 cents instead of 1.40 cents, the present basis. This will give puddlers an advance of 50 cents a ton, increasing the rate from $5 to $5.50, and to the finishing mill hands an advance of 4 per cent. will be given. These wages are the highest that have been paid to puddlers or finishing mill men for some years.

In the Supreme Court at Pittsburgh last week the suit of James Todd and Frank L. Slocum against the Wheeler-Sterling Steel Company was argued. It is an action to recover royalties under a contract. The amount claimed is between $20,000 and $30,000. About 1889 the plaintiffs invented a process for manufacturing aluminum chromium steel. They entered into an agreement with the defendant company to permit the latter to use the method in consideration of their receiving 1 cent a pound for all steel manufactured so long as the secret was not discovered and a similar steel made and placed on the market by others. The defendants paid royalties from time to time up to April, 1893, when they ceased, although it was alleged in the bill that the method had been in use ever since. It was claimed that the defendants used the method in making various brands of steel, and also in making projectiles for cannon, a large quantity of which were placed upon the market. The lower court found for the plaintiffs and ordered an account to be stated.

Trade Publication.

Machine Tools, Shearing and Punching Machines, Steam Hammers, Steam Riveters, Bending Rolls, Cranes, &c.—We have received from William Sellers & Co., Incorporated, of Philadelphia, a copy of the new edition of their catalogue, which illustrates the wide line of machines built by them. Since the last catalogue appeared the company have added many new and improved tools to their list, and have thoroughly revised many of their standard products, making those changes in detail which experience has demonstrated would increase the efficiency or durability, and substituting entirely new designs when it was found advantageous to do so. The first portion is devoted to single and multiple spindle drilling machines, adapted to a wide range of work. This is followed by boring and turning mills, lathes of standard and special types, universal tool grinders, gear cutters, milling machines, planers, shapers and slotters. Considerable space is devoted to punching and shearing machines, riveting machines and steam hammers. Their bending rolls are made both vertical and horizontal, and in sizes up to the widest and thickest plates made. In the division devoted to cranes we find several types of jib cranes, steam and electrically driven swing cranes, hydraulic cranes, electric traveling cranes, gantry cranes, &c. Their 150-ton electric traveling crane, built for the Homestead works, has a span of 50 feet, and is provided with two trolleys of 75 gross tons each, with 30 feet clear lift. The bridge is carried upon eight 37-inch wheels arranged in pairs, supported in equalizing trucks connected to the bridge by large fulcrum pins and steel bearings. Two of the wheels at each end are driven. The load of 75 tons is carried upon six parts of 1⅜-inch chain, arranged so that the lift is vertical, and there is no tendency to lateral movement or to twisting of the load. The hoisting motors, and those of the bridge travel, are controlled by the "series multiple" system. The lower frame of the trolley is placed underneath to protect it from the heat of the large masses of hot metal over which it is used. The catalogue closes with hydraulic testing machines and different systems of power drive.

The Atlantic Iron & Steel Company.—Some modifications have been decided upon in the organization of the Atlantic Iron & Steel Company, the principal points being: 1. The capital stock of the new organization will consist of $10,000,000; $5,000 000 in preferred stock, which will be entitled to a preferential dividend of 7 per cent. per annum, and $5,000,000 common stock. 2. The common and preferred stock will each be $5 par. 3. For each share of stock of the Susquehanna Iron & Steel Company there will be exchanged one share and a half of the preferred stock of the Atlantic Iron & Steel Company, with the right of subscription to share for share so exchanged in the common stock of the Atlantic Iron & Steel Company. 4. For each share of stock of the New Haven Iron & Steel Company there will be exchanged one share and a half of the preferred stock of the Atlantic Iron & Steel Company, with the right of subscription of share for share so exchanged in the common stock of the Atlantic Iron & Steel Company. 5. One dollar per share will be called upon the common stock of the Atlantic Iron & Steel Company. The different companies taken over will have considerable amounts of cash in their respective treasuries.

The Franklin Fund, left to the city of Boston in 1791 by Benjamin Franklin to be used for the benefit of young tradesmen and mechanics, at the end of 100 years, is at last to be expended. The original bequest of £1000 sterling now amounts to about $400,000 and its disposition rests with the city aldermen. Many proposals for its utilization have been made since the fund matured eight years ago, but it seemed to be impossible to agree as to what object it should be devoted. At one time it was urged that the building, equipment and endowment of a first class trade school would be most in keeping with the ideas of the famous testator and an elaborate scheme on that line was laid out, but the proposal did not meet with the approval of the city fathers. It is now announced that one half the sum will be used for the erection of a public building in the South End to be known as the Franklin Building, which will have a hall to be used for public meetings and various lecture rooms in which a course of lectures on trade subjects will be carried on. The other half of the fund will be spent for the extension of public baths and gymnasiums in accordance with a scheme advocated by Mayor Quincy.

The French roller boat "Ernest Bazin," which caused so much of a sensation a few years ago, has been broken up for old material in an English ship yard.

Steel Inspection for the Navy.

Philip Hichborn, chief constructor of the Bureau of Construction and Repairs of the Navy, in his annual report presents some interesting data relative to steel inspection. The amount of work done varies considerably from month to month. Thus during the fiscal year the smallest number of pounds inspected physically and chemically, passed and shipped during any one month was 526,262, the greatest was 8,142,956 and the total for the year was 36,210,675, an increase over the last fiscal year of 14,093,637 pounds.

The following table, showing the average cost of work, together with the percentages of rejections, has been compiled from the headquarters records of one of the principal districts and covers a period of six months, ending June 30, 1899:

Number of heats submitted for test (approximately, 60,000 pounds each)	462
Number of heats rejected, physical and chemical tests	73
Percentage rejected, physical and chemical tests	15.8
Amount of material rolled, pounds	23,175,313
Amount rejected, surface, pounds	5,780,817
Percentage rejected, surface	24 9
Amount of finished material shipped	11,889,169
Total cost of inspection	$2,874.90
Cost per gross ton of material submitted for test	$0 23¼
Cost per gross ton of material rolled	$0 27¾
Cost per gross ton of material shipped	$0.54

The Iron Trade Outlook in Great Britain.

The Iron and Coal Trades Review summarizes editorially as follows the views of a number of well-known men, including Sir Benjamin Hingley, Bart.; Sir Alfred Hickman M.P.; J. D. Ellis, chairman of Sir John Brown & Co., Sheffield; J. W. Spencer, chairman of J. Spencer & Sons, the Newburn Steel Works, Newcastle-on-Tyne, and others: The editor of the *Review* has thought it desirable to collect in this form such evidence as was at command, both as to the reality of the present boom and as to the probable extent of its duration. Of the actual existence of an almost unprecedented demand for iron and steel there was no room for question. As to the duration of this prosperity, however, there is room for considerable difference of opinion, and we are by no means surprised to find that such difference of opinion actually exists. There is, however, one point on which opinions appear to be pretty well agreed. We are guaranteed a continuance of our prosperity for at least a year to come. Most of the iron and steel works have already sufficient work on hand to keep them busy for nearly another year. The industrial situation all over the world justifies the expectation that there is much more work ready to hand. The United States and Germany—the two largest purchasers of iron and steel, excluding our own country—are almost passing through a famine, and cannot get enough to meet their urgent requirements. In this country, however, there appear to be fewer complaints of scarcity, whether of raw materials or of pig iron, than there were a few months ago It is satisfactory to find that the movement of prices is not being affected to any extent worth speaking of by foreign competition, and that values are fixed mainly by the conditions of supply and demand at home. The fact is that despite our large imports of iron and steel during the first nine months of the year the countries that would otherwise be competing with us are now sending us materials, largely because they cannot help themselves. In other words, they are fulfilling contracts made when prices were lower than they are to-day, and many of the sellers would gladly keep their supplies at home if they were at liberty to do so. The large increase of our imports, which would otherwise have a very ugly look, is, for that reason, less serious than it would appear.

There are many features of the present trade situation that do not appear in these statements of our correspondents, but which, nevertheless, confirm them, and are matters of the utmost satisfaction. Some of the most prominent of them have already been referred to in our columns. A notable example is the increase in the recent demands for steel rails, which almost guarantees that our rail mills will be much more fully occupied in the later than they were in the earlier part of the year. Another is the remarkable revival in the tin plate trade, which has called into active operation 100 more mills than were engaged at this time last year. The rail and the tin plate branches were the most depressed and unsatisfactory of all up to a month or two ago. It would now appear as if they also were about to enjoy an innings—and not before time. The wire rod trade has been to a large extent galvanized into new life by the American demand, and we have already recorded that one of the principal firms in this industry is almost wholly engaged on American orders. The concerns whose specialties are war and shipbuilding materials are all as busy as they can be, and they are apparently likely to remain so. Nor is it likely that the present war in the Transvaal, whatever its issue, will materially affect the trade, for the wants of that small Republic have hitherto been met mainly by Germany, and it is therefore the German houses that are most likely to suffer. The only danger to be apprehended is the restlessness of labor, and the possibility of disputes as to wages. At the moment this danger is not pressing. On the contrary, there has rarely been a period of good trade during which labor movements were less aggressive. The issue of the engineering and South Wales strikes appears to have led the workmen to think more deeply on the folly and futility of strikes, and to predispose them to accept arrangements based on the sliding scale system more readily than formerly. Employers, moreover, have for the most part readily admitted the workmen to a reasonable share of the good things that are going, so that there has been no solid cause for dissatisfaction or revolt. In some cases steel workers have had their wages increased by fully 20 per cent. In Cleveland, only a few days ago, the miners were given an advance of 17 per cent. at one stroke. In all cases alike the workmen have had substantial advances, and if more are claimed, and justly due, we doubt not that they will be amicably arranged.

The American Steel Hoop Company.—An official statement shows that from the date of organization of the American Steel Hoop Company, April 17, to November 1, the production of finished iron was 61,273 tons and of steel 221,057 tons, a total of 282,330 tons. The shipments during the same period were 61,230 tons of iron and 224,897 tons of steel. The production of muck bars was 59,463 tons and the shipments 11,118 tons. The output of pig iron was 125,269 tons and the shipments 124,734 tons. The production of coke was 57,392 tons and the shipments 59,127 tons.

The Neville Island Plant.—Currency has been given recently to reports that the American Steel & Wire Company had purchased 600 acres of land on Neville Island, near Pittsburgh, and had determined to erect there four or five blast furnaces, a Bessemer steel plant and wire rod and wire mills. The plan of concentrating at one point the scattered works located in the Pittsburgh district seems plausible, the American Steel & Wire Company controlling there the Edith furnaces, the Oliver & Snyder and Shoenberger Bessemer plants, and the Oliver, Braddock and Rankin rod and wire mills. We are advised, however, by John W. Gates, chairman, and John Lambert, president, of the company, that the purchase of the land has not yet been made, and that, in fact, it is doubtful whether a stock yard company have not succeeded in acquiring the property.

Joseph H. McClure, a retired iron merchant of Philadelphia, died on October 31, at his home in that city at the age of 71 years. He was born in Chester County, Pa., and removed to Philadelphia in 1858. He first engaged in the coal business, but subsequently established the firm of McClure & Co., iron and steel merchants, of which he was the senior member.

In referring to the establishment of the works of Gay & Ward as makers of milling cutters, at Athol, Mass., we stated in our issue of October 13, page 28*d*, that T. J. Gay was the originator of the relieved rotary gear cutter. Our attention has since been called to the fact that the late Joseph R. Brown of the Brown & Sharpe Mfg. Company patented the rotary gear cutter, which was the first formed cutter, on November 29, 1864.

The Republic Iron & Steel Company, Valley district, Youngstown, Ohio, advises us there is no truth in the report they would establish a central power station at Youngstown.

The application of liquefied carbonic acid gas to the extinguishment of underground fires, or fires in mines, has been explained by George Spencer, before the Institution of Mining Engineers, says *Nature*. It seems that at a colliery with which Mr. Spencer was connected, a fire occurred in a heading, as a result of a fall of roof and sides on steam pipes. The heading was built off with as little delay as possible, but, notwithstanding all efforts to shut out the air, sufficient reached the seat of fire to keep it burning slowly; it was therefore decided to apply carbon dioxide, and for this purpose six cylinders of liquefied gas were successfully used. It is not assumed that such a method can be successfully applied to all fires; but, for instance, in case of fire on shipboard, the use of carbon dioxide might prove invaluable, being quickly applied, and saving much damage by water.

The hearing before the court in the matter of the confirmation of the sale of the New Castle Engineering Works, New Castle, Pa., to the Pennsylvania Engineering Works was adjourned until Monday, November 13.

HARDWARE.

Condition of Trade.

THE market has not lost anything of its confident tone in the last week or two, the tonic effect of the heavy purchases of railway material being evident. The demand in Hardware lines is most active for goods which have not been radically advanced, and this includes a large variety of products. During the past few months many manufacturers have been giving their customers the benefit of the low prices of raw material on hand or contracted for, estimating their costs on the basis of the actual price paid and not what the material would cost them if purchased at market rates. As such supplies are exhausted and the manufacturers are compelled to enter the market their goods will necessarily cost them considerably more and they will have to advance their prices. This is a matter in which some of the manufacturers have been very conservative and have refrained from changing their prices unless actually necessary, and as a result a good many goods are still relatively low. On such lines the jobbers are buying very liberally, counting the purchase a safe one, and in any event likely to yield a large profit if the goods advance. The market is thus being scrutinized very closely by the buyers of the large houses, who are placing orders conservatively for the lines which are high, but are buying freely of goods which they consider pretty sure to go up in view of the condition of the Iron market and the volume of trade present and prospective. Manufacturers are naturally careful in regard to the acceptance of orders for future delivery. Many of them have learned a bitter lesson by the experience of the year, as they have been filling orders taken at low prices for goods which have in some instances more than doubled in price, and on which they were not fully covered for the raw material. This is costing them so much as to make the business very unprofitable, notwithstanding its volume and the current high prices. In some of these lines it is understood that shipments are now being made at prices which are 50 per cent. below those now ruling. Manufacturers are exercising care not to be caught in a similar way and many are refusing to accept orders except at prices ruling at time of shipment. This is certainly the only reasonable course to pursue in cases where they cannot cover themselves securely as to material. If the judgment of the houses who are desirous of placing such orders is to be regarded as sound and prices are to go up as they anticipate, a conservative policy on the part of the manufacturers is obviously a wise one, that they may be in a position to reap the advantage of the advances themselves, and not be obliged, as so often is the case, to compete with their own goods in the jobbers' hands. Some of the manufacturers are undoubtedly loading up with orders at current prices, but others, including prominent concerns, prefer to give the trade such goods as they need for their present requirements and decline to accept future orders except at prices ruling when the goods are shipped. Stocks in the hands of the jobbers are generally heavy, and there is, on the part of some, at least, a disposition to dispose of goods on hand before adding to their stock by placing further speculative orders. On some lines high prices are certainly curtailing consumption to a greater or less extent. This is notably the case in building, as many are deferring the erection of houses because of the largely increased cost of material, and especially structural iron. On this account the large stocks of Builders' Hardware in jobbers' hands are not moving as freely as other lines, and many retailers complain of only a moderate demand for this class of goods. At the same time the general activity in business leaves little ground for complaint.

Chicago.

(By Telegraph.)

The settled confidence in the continuance next year of present prosperous conditions, which is shown in so many branches of business, is also exhibited in the Hardware trade. Jobbers report the demand from dealers not only heavy for immediate requirements but large orders are also being placed for spring goods. This trade is much in advance of the usual time for such movements. Wire Cloth is being taken by retail merchants, who are now putting it in stock so as to be prepared for their next season's trade. Those who had difficulty in getting sufficient supplies the past season are most anxious to be well stocked for next year. Manufacturers are now quoting prices for immediate acceptance and jobbers name $1.40 as the price at which they also will take orders for immediate delivery. Steel Goods, Ice Cream Freezers and other articles for next spring's trade are in good demand. Some jobbers report that they have already booked orders for 75 per cent. of the entire trade they handled in Steel Goods the past season. Manufacturers of Steel Goods are advising jobbers to send in their specifications now, as they have never seen orders come in faster and they desire to take care of their regular trade. Batcheller & Sons Company have withdrawn quotations on Steel Goods on account of the advanced cost of raw material, and it is expected that their new prices will be at least 10 per cent. higher. The demand for all kinds of staple goods is as heavy as before and the prospects are certainly bright for a continuance of good business for the remainder of the year. Sheet Zinc has been reduced ½ cent, being now quoted at 7¾ cents, base. Heavy Hardware jobbers are having a continued good demand, with bigger orders being received from manufacturing consumers, who are not getting their deliveries from mills fast enough

St. Louis

(By Telegraph.)

There has been no disappointment felt by those who anticipated a good October trade Expectations were realized and sales ran ahead of those in October, 1898. General line of business continues good and trade remains in a firm normal condition. For the year prices are of course higher, but it is also true that the people's purchasing power is much greater than in years past. The latter fact is generally forgotten when the greater cost of goods is up for adverse comment. New stocks are being inquired about, and while every now and then a new venture is put under way it is expected that the usual proportion of new stocks will be opened at the beginning of 1900. Shelf Hardware and small goods as a rule are moving freely and at profitable prices. Holiday articles are selling probably ahead of time. It is true that early

shipments are more in favor on the part of both buyer and seller. The one hopes to buy at lower figures next year and the manufacturer thinks future sales will be based on advanced prices. Some interests report a good movement of Galvanized Sheets, but the majority find a very slow action. Black Sheets are quiet and somewhat weak. Tin Plate, especially roofing brands, is selling well. Judging from more prompt shipments being received, manufacturers seem to be catching up with orders. This has its application to Hammers and Hatchets as one line, but Edge Tools are still in urgent demand. Carpenters' Tools, Hand Saws and Planers of all kinds are in fine sale. The demand for Cross Cut Saws is reported as unprecedented and indicative of activity in the lumber regions. Sash Weights are finding quick sale at prices from $5 to $6 greater than prevailed two months ago. Another advance of about 5 per cent. has been made on Tubular Barrows and Road Scrapers. The Heavy Hardware trade is in good shape. The manufacture and sale of Wagons, Carriages and Vehicles of every description has continued beyond the usual time this year and no immediate let up is in sight. It is unlikely that much stock in the shape of supplies will be on hand at the wind up. It is reasonably assured that next year's prices of Vehicles will show advances in keeping with greater cost of material.

Notes on Prices.

Wire Nails.—The Wire Nail market continues in about the same condition as last week. Demand is moderate and for the most part for early requirements. The freight rate on Nails was advanced to the winter schedule on November 1, which makes a slightly increased cost, but it is likely that many jobbers will continue present prices, so long, at least, as their stocks hold out. Quotations are as follows, f.o.b. Pittsburgh, terms, 30 days net:

To jobbers in carload lots	$2.95
To " in less than carload lots	2.97½
To retailers in carload lots	3.10
To " in less than carload lots	3.20

Jobbers, as a rule, are not holding to card prices, owing to stocks purchased at lower figures.

New York.—Business continues about in the same volume in the territory tributary to this market. Owing to the advance in freight rates Miller & Brewer of this city have announced that on and after November 9 their price on Nails will be advanced 5 cents per keg. The irregularity in prices continues, and the market is likely to remain in an unsettled condition until present stocks are exhausted. The following quotations fairly represent the market:

To retailers, carloads on dock	$3.25
To " less than carloads on dock	$3.30 to 3.40
Small lots from store	3.35 to 3.45

Chicago, by Telegraph.—Manufacturers report no falling off in the demand, but a large volume of trade coming in from all sections of this territory. Jobbers also report a fine volume of business, with no question as to prices. Single carload lots continue to be quoted on the basis of $3.28, Chicago, and small lots from stock at $3.38.

St. Louis, by Telegraph.—Nothing new has transpired in the trade here, and a normal movement is seen. The only change in price is brought about by the 3 cent increase in weight rates. Holders of Nails will doubtless ignore this until mill purchases must be made. We quote $3.33, base, St. Louis, for single carloads, and $3.43, base, for small lots out of stock.

Pittsburgh.—The condition of the Wire Nail market is unchanged from that noted in our report last week. Demand is good, but buyers continue to place orders only for immediate requirements. We quote f.o.b. Pittsburgh, terms, 30 days net cash:

To jobbers in carload lots	$2.95
To " in less than carload lots	2.97½
To retailers in carload lots	3.10
To " in less than carload lots	3.20

Many jobbers who have stocks of Wire Nails bought some time ago are shading the above prices.

Cut Nails.—Manufacturers of Cut Nails in Eastern territory held a meeting last week at which time existing prices were reaffirmed. The advance in freight rates to winter schedule will have the effect of a slight advance in the cost of Nails, in carloads and less than carloads, equivalent to the extra freight from mill to destination. Quotations in Eastern territory are as follows, f.o.b. Pittsburgh, freight being added to point of destination:

To jobbers in carload lots	$2.60
To " in less than carload lots	2.65
To retailers in carload lots	2.70
To " in less than carload lots	2.85

Some irregularity exists in prices among jobbers, owing to lower price stocks.

New York.—No change has taken place in the local Cut Nail market since our last report. Miller & Brewer of this city have announced an advance of 5 cents per keg in their price, to take effect on and after November 9, owing to the advance in freight rates. Prices continue irregular, and quotations for single carloads on dock are about $2.65 to $2.70. Small lots from store are held at $2.75 to $2.80.

Chicago, by Telegraph.—Prices are unchanged and sales are about as usual, the mills, of course, sharing in the natural increase of business. $2.85, base, is named for small lots out of stock.

St. Louis, by Telegraph.—The usual demand is reported for Cut Nails, with jobbers continuing to quote $2.80 for small lots from stock.

Pittsburgh.—Volume of business is light, having fallen off considerably recently. The tone of the market is fairly strong. We quote Cut Nails at $2.50 in carload lots, f.o.b. at mill, Wheeling but for very desirable orders this price would be shaded.

Barb Wire.—A moderate demand for domestic use represents the condition of the Barb Wire market. Prices are unchanged and quotations for domestic trade are as follows, f.o.b Pittsburgh, net cash, 30 days:

To jobbers in carload lots, Painted	$3.40
" " Galvanized	3.55
" in less than carload lots, Painted	3.42½
" " " " " Galvanized	3.57½
To retailers in carload lots, Painted	3.55
" " Galvanized	3.70
" in less than carload lots, Painted	3.65
" " " " " Galvanized	3.80

Chicago, by Telegraph—The most important event in this trade is the destruction by fire of the finishing part of the American Steel & Wire Company's plant at Waukegan, Ill., which occurred on Saturday afternoon last. The company state the rolling mill was not damaged and that their warehouse with a stock of goods was also saved. They have already made arrangements for the execution by other plants of the unfilled orders at Waukegan, so that such orders will be taken care of with very little if any delay. The facilities of the company are such that even the total destruction of one of their large works can be to a great extent, if not altogether, made up by their other large factories. The general demand for Wire continues excellent and the trade in Barb Wire has lately been considerably better. Jobbers report quite a fair demand for Wire Fencing, which, however, is not quite up to the demand for Wire Nails. Prices are as follows: Single carloads. Plain Annealed Wire, $3.13; Painted Barb Wire, $3.73; Galvanized Barb Wire, $3.88. Jobbers ask 10 cents advance for small lots.

St. Louis, by Telegraph.—No great selling movement is spoken of this week nor dissatisfaction expressed. The only change in price is brought about by the 3 cent freight advance. Present prices are $3.78, St. Louis, for Painted, single cars, and $3.88 for small lots. Galvanized brings 15 cents advance.

Pittsburgh.—There is very little doing in domestic Barb Wire, but export demand is good. Quotations for domestic Wire are $3.40 for Painted in carload lots to jobbers and $3.65 in less than carload lots, with an advance of 15 cents for Galvanized, all f.o.b. Pittsburgh. Terms, 30 days, net cash.

Smooth Wire.—The demand for all classes of Smooth Wire continues large. No change has occurred in prices. Quotations are as follows, f.o.b. Pittsburgh, terms, 30 days, net cash:

To jobbers in carload lots	$2.80
To " in less than carload lots	2.82½
To retailers in carload lots	2.95
To " in less than carload lots	3.05

Pittsburgh.—Demand continues large, but is not as heavy as some time ago. The tone of the market is strong and we quote: To jobbers in carload lots, $2.80; to jobbers in less than carload lots, $2.82½; to retailers in carload lots, $2.95; to retailers in less than carload lots, $3.05, all f.o.b. Pittsburgh; terms, net 30 days. The charge for galvanizing is 50 cents on sizes from Nos. 6 to 14 inclusive; on Nos. 15 and 16, 85 cents, and on Nos. 17 and 18, $1.10.

Sheet Zinc.—Under date November 2 the reduced price of $7.25 per 100 pounds is announced by the manufacturers of Sheet Zinc. This price applies to Sheet Zinc in 600 pound casks of the thicknesses between Nos. 9 to 15 inclusive, and of the widths between 32 to 46 inches, and of the lengths between 84 and 90 inches, with extras for other sizes. For small packages there are the following extras:

	Cents per 100 pounds.
100-pound casks, all numbers up to 12, inclusive	30
100 " boxes, not larger than 30 x 40 inches	30
200 and 300-pound casks, all numbers up to 14, inclusive	20
200 " 300 " boxes, not larger than 36 x 60 inches	20

The discounts are as follows:

	Cash with order.	Quantity.	Total.
Carload lots, per cent	3	5	8
9,000-pound lots, per cent	3	3	6
6,000 " " "	3	2	5
3,000 " " "	3	1	4
Less than 3,000 pounds, per cent	3	0	3

Lalance & Grosjean Mfg. Company.—The Lalance & Grosjean Mfg. Company, 19 and 21 Cliff street, New York, have issued, under date of October, 1899, a new and revised price-list of their Tinware, Galvanized Ware, Japanned Ware, &c., which takes the place of all previous lists. The present list embodies a new policy on the part of the company, the prices being brought down much below the high lists previously in vogue and the discount on all goods being made uniform. The new discount is 25 and 10 per cent. off on Planished Ware, Brass and Copper Ware, Spoons, Hotel Ware, Plain Stamped Ware, Retinned Stamped Ware, Tinners' Trimmings, Pieced Tinware, Galvanized Ware, Polished and Bright Ironware and Japanned Ware. Terms, 60 days or 2 per cent. cash in ten days.

Machine Screws, Set and Cap Screws, &c.—We give below the advanced prices adopted under date October 24 by the manufacturers of Cap and Set Screws, Machine Screws, &c. Terms cash in 30 days:

	Discount. Per cent.
C. H. Iron Set Screws	60
C. H. Steel " "	60
Hexagon Head Cap Screws	50
Square " " "	55
Round " " " milled from solid bar	40
Flat " " " " " " "	40
Button " " " " " " "	40
Stud Bolts, milled over all	50
Round Head Iron Machine Screws	50
Flat " " " "	50
Fillister " " " "	40
Round " Brass " "	50
Flat " " " "	50
Fillister " " " "	40
Stove Bolts, in Boxes	62½
Milled Coupling Bolts, heads and nuts ground	40
" " " " " " not ground	50
Hand Taps	50
Machine Screw Taps	60
Finished Hexagon Nuts	60
Semi-Finished Hexagon Nuts	60

Staples.—The following revised discounts, embodying advances on Poultry Netting and other staples, are announced by the Associated Manufacturers under date November 2:

	Discount per cent.
Basket Handle Staples	75 and 10
Bed Links	75 and 10
Bed Spring Staples	75 and 10
Blind Staples	75, 10 and 5
Broom Staples	75 and 10
Clamps	75 and 10
Clinch Staples	75 and 10
Crate Hooks	75 and 10
Double Pointed Tacks in dozens	90 and 5
" " " " bulk	75 and 10
Electrician Staples	75 and 10
Hoop Staples	75, 10 and 5
Matting Tacks	75 and 10
Pail Ears	75, 10 and 5
Poultry Netting Staples	80 and 10
Shade Tacks, in dozens	90 and 5
" " " bulk	75 and 10
Special Staples	75 and 10
Steel Spring Staples	75 and 10
Tube Staples	75 and 10
Wire Cloth Staples	75 and 10
" " " in papers	90

The Stanley Works.—Discount Sheet No. 6, November 1, 1899, has been issued by the Stanley Works, New Britain, Conn., and 79 Chambers street, New York. It brings their regular printed discounts up to date, covering changes which have been announced from time to time and revised prices on a few other goods.

Cordage.—The advance in Rope which the trade have expected, owing to increased values of Hemp, has not yet been announced. Jute and other kinds of Cordage were being substituted for Sisal, owing to the high price of the latter. Some of the Jute mills have withdrawn quotations, as their entire output for the remainder of the year has been disposed of. New business in Manila and Sisal Rope is moderate, buyers not anticipating their requirements. Quotations for Rope in carload lots are as follows, with an advance of ¼ cent in less quantity, f.o.b. New York, Boston or Philadelphia:

	Per pound. Cents.
Manila, 7-16 inch and larger	14¾
" ⅜ inch	15¼
" ¼ and 5-16 inch	15¾
Sisal, 7-16 inch and larger	10¼
" ⅜ inch	10¾
" ¼ and 5-16 inch	11¼
" Lath Yarn, Medium and Coarse	10

Manila Tarred Rope, 15 thread, is quoted at 13½ cents, as is also Manila Hay Rope, Medium. The price of Jute Rope is 6¼ cents.

Glass.—The organization of the American Window Glass Company has been completed by the election of officers. A paper devoted to Glass interests states that the total capacity of the new trust is 1782 pots, or 61 per cent. of the total capacity of the country, which is 2916 pots, leaving 1134 pots outside. It now appears doubtful whether the trust can reduce stock to a point where they will be willing to resume the manufacture of Glass by December 1. Demand is reported as only fair by the trust, while the independent factories are busy. It is understood that the latter are making an effort to form an organization of independent Window Glass manufacturers. It is also understood that manufacturers formerly members of the American Glass Company, but not identified with the new trust, will start their factories as soon as their contracts expire with the old company, which will be December 1. Prices remain unchanged.

Paints and Colors.—*Leads.*—Demand for Lead products keeps up well, and indications point to activity rather than dullness for the remainder of the year. The market continues firm for White Lead in Oil, and higher rather than lower prices are anticipated for 1900. Quotations are as follows: In lots of less than 500 pounds, 6½ cents; in lots of 500 pounds and over, 6 cents.

Oils.—*Linseed Oil.*—The Linseed Oil market remains firm at former quotations, with a moderate demand. The general price of City Raw is from 44 to 45 cents, according to quality, though one brand is still held 2 cents higher. State and Western Oil is quoted at 44 to 45 cents per gallon.

Spirits Turpentine.—The Turpentine market has fallen off about ¾ cent since last week, present quotations being as follows: Southern, 50¾ cents; machine made barrels, 51¼ cents per gallon. Large buyers are not in the market. Receipts from the South are moderate in volume, with prospects of a further falling off. There are rumors to the effect that a combination is in course of formation with a view of controlling the naval store business of the country.

From a Buyer's Point of View.

Article II.

WE all have our prejudices, even the man who sits at the buyer's desk not being entirely unbiased—at least, in some matters. Of course every one who knows anything at all understands that buyers as a class are so infallible that almost any one of them would be a fit candidate for the Vatican! But when it comes to prejudices we are liable to err—slightly at least—and perhaps let our personal feelings stand in our own light.

Strokes the Wrong Way.

For example, I find I take dislikes to certain men who call upon me representing manufacturers, and my prejudice becomes so strong that I know I do not always treat them in a way to make them disposed to give me their very best terms and prices. I think all buyers will agree with me that the men who come to sell us Hardware and kindred lines are in the main good business men and gentlemen, but there are not a few who stroke us the wrong way. Let me give an example. I was seated at my desk a few days ago, engaged with one of our old friends who represents a number of lines, when without the least hesitation or "pardon the interruption for a second" another salesman (not a stranger) came up to me, handed me his card and said, "How's things?" "What things?" I asked. "Oh, business." "We are very busy," I said, "and you will have to come in this afternoon." "At what hour?" "Oh, say 4 o'clock." "May I interrupt this other gentleman just a second? I have a sample of a new Wrench that I would like to have you look at before I show it to any of your competitors," and he pulled a miniature Wrench out of his pocket and tossed it on my desk. Now if that man had handed me the Wrench I should have examined it, but the toss made me feel like kicking the fellow out of my office; but I tried to be polite and said, returning the Wrench to him unexamined, "You must excuse me until this afternoon unless you choose to wait here outside this office until I have finished with this gentleman." "Very well, I'll wait," and he stepped outside my little inclosure. He did not seat himself on the "mourners' bench," but walked up and down the floor puffing a cigarette and glancing toward my desk continually.

Only an Ass.

My Eastern friend, who has a calm, easy manner, seeing I was ruffled said to me, "If I were you I wouldn't let a thing like that annoy me; he's only an ass." And I soon cooled off, but I didn't buy any Wrenches that day nor anything else from the man who didn't know enough not to step in between another salesman and myself.

Confidential Prices.

When a salesman tries to make me believe that he is giving me a lower price on a certain article than he has obtained for the same thing from my competitor, who may be a larger distributor than I. I am exceedingly skeptical; but when this same salesman whispers that astonishing information in my right ear or even the left I am still more doubtful than I should have been had he spoken his little piece in an ordinary tone of voice. Please bear in mind that the mourners' bench on which other waiting salesmen may be seated is not so near my desk that a quotation given me can reach said bench.

No Whispering Allowed.

I hate to have a man get close to me and whisper an extra 5 per cent., for example. If while he whispers he holds on to my watch chain that only makes the case more interesting. There are only two or three men who ever go through this performance with me, and were they persons of any perception or did they understand human nature a little bit they would have discovered long ago that these tactics were not agreeable to me.

Flattery not a Winner.

It is all very sweet and flattering to have a salesman tell you that he is favoring you above your competitors, but the buyer who is not easily cajoled is sure to take these special and strictly confidential quotations not only with a grain of salt but with a whole barrel full and overflowing. Of course the majority of old timers who call upon me never attempt to catch fish with any such poor bait as "a special quotation which the factory has authorized me to make you."

Requests for Catalogues, &c.

M. S. HARRISON & CO., Tifton, Ga., have just opened a new Hardware store, and are desirous of hearing from manufacturers and jobbers with copies of catalogues, price-lists, &c.

Johnston, Beyer & Co., J. J. Johnson, manager, have engaged in the general Hardware and Agricultural Implement business at Rural Valley, Armstrong County, Pa., and solicit catalogues, discount sheets, &c., relating to their line.

Novelty Department Store, Ed. Chrischilles, Jr., manager, Burt, Iowa, are handling a general line of Hardware in connection with other merchandise, and advise us that they would be glad to receive catalogues, price-lists, and other similar matter from manufacturers and jobbers.

E. W. Roderick has withdrawn from the Hardware business at Cridersville, Ohio, but will re-enter it at another point as soon as he can find a satisfactory location. He requests catalogues and quotations from the trade.

On December 1 a new firm under the style of S. W. Davidson & Co. will embark in the wholesale and retail Hardware business at Gainesville, Ga. They will be pleased to have manufacturers send them catalogues, price-lists, &c.

T. W. Dixon has disposed of his Hardware, Farm Implements and Sporting Goods business, at Rutherfordton, N. C., to C. P. Tanner, who is continuing under the style of Rutherford Supply Company. Mr. Dixon, with A. C. Hutchins of Charlotte, will open a retail Hardware store in the latter place January 1, and requests catalogues, price-lists, &c., from manufacturers and jobbers. The new firm will carry a general stock of Hardware, Tiles and Mantels, House Furnishing Goods, Cutlery, &c. It is probable that they will incorporate and conduct business under the style of Southern Hardware Company. Catalogues and other matter should be addressed to T. W. Dixon, Charlotte, N. C.

The Chain Consolidation.

RELIABLE advices are that the consolidation of the Chain plants throughout the country, which has been under way for some months, has practically been consummated, and will be put through unless some unforeseen contingency should arise. It is understood that 13 plants have been included in the consolidation, these being all the important ones with the exception of two or three. Full details of the consolidation will be available within a few days.

A New Shovel Plant.

THE LAUGHLIN NAIL COMPANY, Wheeling, W. Va., are building a new Shovel plant at Martin's Ferry, Ohio, and expect to be in the market about February 1, 1900, with a full line of Shovels. This concern will also start up their Cut Nail factory about the same time, and will probably be the largest individual producers of Cut Nails in the United States.

D. C. Pixley has been making improvements in his store at Orange, Cal., including an increased amount of shelving and a Warren Hardware Cabinet.

SPECIAL BRANDS:

THE MANUFACTURERS' VIEW.

ONE of the features of the Hardware trade which has had a gradual development is the practice of many jobbing houses of having their own special brands of goods, particularly in the line of Tools, which are made for them by manufacturers whose names do not appear in connection with the goods. These special brands are naturally of various grades of excellence, according to the desire of the house owning them. In some cases they are of high quality, but usually of only fair and sometimes of confessedly low quality. The growth of the practice is the natural result of the desire of the jobbers to have brands which they can control and advantageously push, establishing a trade if the goods prove acceptable. At the same time the goods often yield a broader margin of profit than the manufacturers' brands, on which a reputation is already established and which cost more, while owing to competition selling prices are closer.

As a rule there is little doubt that special brands are not of as good quality as the makers' best brands, many of the manufacturers refusing to send out their best products except in connection with their own names.

From the manufacturers' point of view there are many obvious objections to the practice, chief among them being the fact that the manufacturers' reputation is not enhanced by the sale of such goods, while at the same time it is usually necessary for them to make very low prices on such special brands, the order being generally figured on by several competitors and placed with the one, other things being equal, who names the lowest price.

We give below extracts from some letters from manufacturers on this subject, in which the matter is discussed by them and its objections pointed out. In a few cases special brands are regarded by our correspondents with a modified approval, which contrasts strongly with the almost unanimous sentiment on the part of the manufacturers against them, who are opposed to the practice and endeavor to discourage it as far as possible:

From a Prominent Western Manufacturer:

In our opinion this special brand business works a hardship to the manufacturer and seems to be getting more extensive every day. A great many of the larger jobbing houses desire to have a special brand for their own use, for the reason that it advertises them and permits them to be independent of the manufacturer, and any time they so desire can change their base of supplies without having to make any particular explanation to their customers. This of course is to their advantage.

On the other hand there may be some small advantage to the manufacturer in permitting him to dispose of what might be a surplus stock in a quarter where he might not otherwise be able to do business, and perhaps permits him to have two irons in the fire, so to speak, where under ordinary circumstances he could dispose of only his regular line.

From the manufacturer's standpoint, however, this does not compensate for the loss in identity of his line. From the consumer's standpoint we should say it would be much more advantageous for him to buy a brand of goods the reputation of which has perhaps been long established and to the manufacturers of which he can make immediate complaint in case of any difficulty arising. We also believe that it is not to the advantage of either the manufacturer or the trade to have before them these opportunities, which tend to disturb values.

From Southern New England:

We do not put out goods under special brands or labels except in the use of an imprint when requested, such as "Manufacturer for So-and So."

Our product is distinctive and the maker's name is figuratively with the goods at all times. Thus the identity of either cannot be lost under a generate name, and such a practice accordingly would stand for naught with us. Naturally we are barred from using labels or special brands to move "seconds," as customary with many manufacturers.

From Makers of Household Articles:

In regard to special brands being put on goods for the jobbers would say that after a manufacturer spends a great deal of money in popularizing his particular brand of goods it does not seem wise policy to turn around and sell these same goods under another brand to some jobber, thereby losing his identity and losing the efforts he has put forth in making his brand popular and staple upon the market. We are this morning in receipt of a letter from one of our customers desiring us to mark the goods we sent them with their name, as though they manufactured this certain line, which we have been and are still popularizing. We certainly shall refuse to do so.

We think a manufacturer makes a mistake when he sells his own line of special goods, of special quality, style, &c., to jobbers or others under different brands, as it will not be long before he will lose his identity and be at the mercy of the buyers, who will not agree to confine their orders to the original house or manufacturer of these goods. The jobber will go to some other manufacturer and get him to bid on the same line and they may not be made as well, but the consumer will not readily detect the difference, as they are sold under the same brand, especially as the jobber will not hesitate to say, "These goods are exactly the same as the original brand, only we have our own brand."

From Manufacturers in Ohio:

We do not make a practice of furnishing our goods other than with our own name on. Several years ago we think manufacturers in our line did this more than they are doing it now, although it is done to a certain extent at the present time. We believe it is not a benefit to the manufacturers, and it is a question in our minds whether it is a benefit to the jobbers who purchase the goods with their name on. We believe the practice of making goods in our line with jobber's name on is gradually being done away with.

From a House Who Refuse to Make Special Brands:

We do not make goods under special brands. This is generally understood by all the parties whom we sell and we have had no inquries for such for a long time. Some time ago we were asked to do so, but declined, and the same parties that made this request have dealt with us regularly since, and we are quite sure have come to the conclusion that they can do better selling goods under our regular brand, because they are not asking this of us now. It is a principle we adopted years ago and shall always stick to it, our reason being that we make a class of goods that are strictly first class and we are willing to stand back of them. Were we making goods of cut weight or not up to the highest standard we would prefer to put them out under special brands.

From Central New England:

We do not make goods with special labels for the jobbing trade. We have been through several years of lean kine, and there is no profit in many goods. The buyer who has first obtained the least possible or impossible

price next asks that we make goods of a special brand, or packed with their special label, or with some other additional concession. The goods can only be made cheaply in large quantities and in regular system. Putting through a moderate lot with a different brand, or different label, is a great disadvantage to the manufacturer. We have been unwilling to go into this feature of the business. We have always been proud of our product, and willing to affix our name to anything we made, and equally unwilling to give some one else the credit for making goods of our class and quality. We do not make special brands, or special labels, and we do not believe it is for the interest of the trade or of the manufacturers to encourage this practice.

From a Western Tool Manufacturer:

We seldom make our goods with special brands or labels. We have orders for goods occasionally with special marks, and if the customer will not take the goods in any other way we make same up with the special marks, but we try to discourage this as much as possible, as it necessitates extra expense, and customers are not usually willing to pay for any of these extras. They want the goods at the regular price, and of course they cannot be produced in small quantities at the regular price; hence the loss to the manufacturer.

From an Ohio Maker:

We brand one article with the name or initial of certain jobbers to a limited extent. I think it is a poor practice, and in a great many instances it delays shipments of the goods to the jobber on account of the necessity of making goods specially for him, when if goods could be shipped out of stock orders could be filled more promptly. We shall discourage the practice hereafter all that we possibly can.

From a Connecticut Manufacturer:

We have found it necessary, owing to the requirements and demands of a great many of our customers in the jobbing trade, to make special brands and labels. Almost without exception, on one particular line of goods, they demand that they be put up under their own special name or brand, and it is frequently a hardship for the manufacturer to comply with these demands, owing to the fact that their orders are small, and yet their demands are just as large, and just as persistent, as though they were giving you an order for a large quantity of goods. If this practice of small jobbers could be eliminated it would be desirable on the part of at least some manufacturers. The practice is carried to a large extent, and is disadvantageous to the manufacturers in a large degree.

A Grand Nuisance:

We do not solicit trade that specify special brands or labels. We are running mostly on patented goods, and therefore have some measure of protection, but particularly on goods that can be cleverly copied there is a good deal of selling under special brands.

With reference to the advantage and disadvantage, we are aware that this is a very large subject. As far as the manufacturer is concerned branding of goods for special customers is a grand nuisance, for there is sure to be sorting up, and little special items wanted to fill in later. The manufacturer is by no means through when he fills the original order with a special brand on it. We think the system quite a disadvantage to manufacturers who are producing first class goods.

Speaking of the subject from the merchants' point of view, we can see that there may be occasional advantage, but we think we are not saying too much when we suggest that in our opinion the trade generally have come to look with some degree of suspicion on goods that are sold under one name here and another there. We have often refused orders for our regular goods under special brand, occasionally from our old and valued customers, but we still believe that in the long run we have sold more goods and held a better reputation by doing so.

Where Special Brands May Be Useful:

We have not made any of our goods in special brands except in one case. We have made them up for some very large retail trade when the special reason for so doing was to have them leave alone our regular goods sold by the Hardware and House Furnishing Goods trade, and avoid any disposition to cut established prices on regular goods. Our experience in these few cases has been that these houses do not cut prices on the special brands, as they have exclusive sale for their city, but sell them at a better margin of profit. This permits the retailer in Hardware and House Furnishing Goods to get a fair price on regular goods and hold it, for even though the house with special brand did cut price on their goods they are not the same brand as that carried by the other dealers.

Special brands appear to us to be useful in cases like the above—to keep peace and prevent price cutting—but except to meet some special need the general use or making of special brands is likely to be detrimental in the long run to both the manufacturer as well as the jobber they are made for.

Concerted Action on the Part of Manufacturers Welcome:

Our disposition with reference to furnishing special brand Saws to the jobbers is unfavorable to this class of business. In fact we took a stand last year absolutely refusing to make any such Crosscut Saws, and we are at present making no Crosscut Saws whatever except under our own brands. It is true, however, that we are still furnishing some special brand Hand Saws, as this class of work seems to be pretty strongly intrenched in the trade, although we should welcome any concerted action on the part of the manufacturers by which it could be eliminated. We feel that it is detrimental to our interests as manufacturers and demoralizing to the trade. We are convinced that in the end it would be just as well for the jobbers if they were to handle nothing but manufacturers' brands. Our objections to this class of business are briefly as follows:

1. It has a tendency to reduce the quality of the goods. In fact, there is no standard of quality for special brands.

2. The jobber will buy under a special brand and guarantee it to be equal to a manufacturer's brand which costs considerably more. This leads the dealer to think that the manufacturer is getting an exorbitant price on his own brands. Of course the same idea is carried down through the dealer to the consumer, thus bringing manufacturers' brands into disrepute.

3. The jobber should not pose as a manufacturer; it is out of his legitimate field.

4, and chiefly. The special brand business does not add one iota to the reputation of the manufacturer. The jobber gets the reputation, if there is any credit in the goods, and experience has shown that the jobber is not very conscientious about maintaining the quality of his brands. If he can get a little lower price from a competing manufacturer he will take advantage of it, being more particular about the appearance of the article than the intrinsic qualities. We often hear this remark: "I do not care what you put into it so that you make it look all right." Now with us, as manufacturers, this is not the case. We are bound to maintain the quality of our product and the reputation of our brands, and for our part we do not see any redeeming feature to the special brand business from our standpoint.

Put Special Brands on Seconds:

We do not make goods with special brands for the jobbing trade to any considerable extent. We have a few seconds, and we sometimes put a special brand on some of these to please some jobber in the far South, but our first quality goods are sold under our own name and we would not put a special brand on them for any one, no matter how large the quantity required.

It Works to the Manufacturer's Detriment:

We have accommodated the jobbing trade to a great extent making goods under special brands. In our hum-

ble opinion it is a bad thing for the manufacturer, for the reason that he puts out at times a very good and fine grade of goods, and his name does not appear on it at all. He is completely lost in the transaction. Something may happen between the jobber and himself whereby he will lose the trade, and another manufacturer takes it up and produces goods in the same name, and he again is lost. Now we do not suppose there is any remedy for it. At times it works to the detriment of the trade by putting an inferior article on the market at a very high price. It is a matter which cannot be arbitrarily settled, as no manufacturer will throw good orders over his shoulder simply because he has to make them under a jobber's brand. We think, however, it works to the detriment of the manufacturer by reducing price.

Special Brand Only Second-Quality Goods:

There was a time when each of the large jobbers thought he must have some special label for his goods in our line, which might also be used on other goods, and thus particularly identify himself with the trade. It has been tried more or less for a number of years, but the experiments have not been found satisfactory, and in nearly every case, if not in every case, the jobbers have reverted to the manufacturers' labels.

These remarks in our case allude only to second-quality goods. It has been and is to day our rule to show our name on all first-quality goods, and this we do not deviate from in any instance. We think the jobbers have found that the manufacturer is more interested in keeping up the quality of his goods, when they show his own name, than when under special label, which does not indicate where they are made, and therefore any imperfections in the goods do not reflect on him. Then, too, there are a number of other advantages, among which we might mention that when he takes regular goods they may be shipped promptly from stock in the manufacturers' warehouses, while special labels require that the goods be finished especially for the party, thus entailing a delay, which in certain seasons is very objectionable.

Important Investment by Hibbard, Spencer, Bartlett & Co.

HIBBARD, SPENCER, BARTLETT & CO., Chicago, have purchased from Senator Redfield Proctor of Vermont for $90,000 the old "sugar and marble" property on the north bank of the Chicago River between Rush street and the Illinois Central Railroad bridge. The land has a dock frontage of 127 feet and can be connected easily with the tracks of both the Northwestern and the Illinois Central roads.

A. C. Bartlett of Hibbard, Spencer, Bartlett & Co. stated to a reporter that the firm intend to make extensive improvements on their new property. He said: "We have bought the property with a view to its improvement for business purposes. It is our present intention to erect a building which shall either take the place of our present stores at Lake street and Wabash avenue or which may be used for warehouse purposes only. We own the corner building at our present location, and in the event of our moving our entire stock to the new site we shall retain our offices and sample rooms in Lake street. With the superior rail and water transportation facilities which the North Side property affords, we can receive and ship our goods much more economically than we are doing at present."

In addition to the 127 feet of river frontage near the mouth of the Chicago River the property fronts 120 feet in North Water street and has a length of 421 feet on the west and 463 feet on the east side at St. Clair street.

The property has long been made a landmark by the unsightly high chimney of the old sugar refinery. The buildings years ago fell into decay and the property was bought by the Vermont Marble Company for a stone yard and afterward was transferred to Senator Proctor.

While the dock frontage of 127 feet is not long enough to accommodate a modern lake steamer of large tonnage the fact that the Western Transit Company's wharf on the west side and the Lehigh Valley Transportation Company's docks on the east side are arranged for docking vessels will allow of unusual freight accommodations by special arrangement. By this fact freight coming by vessel from any port on the lakes may be discharged without delay to the remainder of the cargo of the steamer by being loaded at the stem or stern of the vessel for special delivery.

Australian Letter.

MELBOURNE, October 10, 1899.

NOTHING of striking importance has happened to this small community, "on the fringe of the world," since my last letter. There are indications of disturbed markets, consequent on the impending South African war, but it is too early to predict what these changes may be.

OUR GOLD OUTPUT is being well maintained, especially in Westralia, and the South African troubles should result in increased attention being given to Australian mining ventures by European investors.

THE COAL PRODUCTION of West Australia, or Westralia, as it is getting to be commonly called, is commanding attention, having increased greatly of late, and it is this writer's opinion that future generations will know this colony and that of Queensland as the two wealthiest Australian States. Immense developments are bound to take place in each within the next few years, in Westralia through its mining products chiefly, and in Queensland on the lines of agricultural development. The most casual visitor to this last named colony cannot fail to be more than impressed with the immense possibilities which seem almost to appeal for development.

IMPROVED BUSINESS.—The balance sheet of McLean Bros. & Rigg, Limited, for 1898 and 1899, recently issued, shows a substantial profit for the year. No doubt the concern are sharing in the general revival. The new Melbourne manager, Mr. Wood, is undoubtedly the right man in the right place. All idea of the company amalgamating with another huge Hardware concern is now off.

METAL MARKET during past fortnight has been firm, but sellers and buyers are alike cautious at present owing to the uncertain outlook.

AMERICAN WIRE has been coming forward freely in one or two recent steamers. No. 8 Fencing Wire (American) has had a moderate demand at £11 for Black and £12 for Galvanized. German has been fetching 10 shillings a ton more, American having been bought on more favorable terms. Inquiries have been good for general Hardware lines, and prices all round are firm, owing to increased cost of raw materials. Pig Iron has been in good demand at £5 to £5 10s. American Barb Wire has been quoted at £15 to £17 for 12 to 14 gauge respectively.

BRIDGE PROJECTED.—Rumors of a bridge across Sydney Harbor are again rife, and it is even said that the New South Wales Government are in negotiation with a London firm of engineers for its construction. Writer has heard that yarn for years past, but a bridge the Sydney folks must and will have sooner or later. Why don't some enterprising Americans look after this matter? A little Yankee energy brought to bear on the proper quarters in Sydney would effect the matter promptly.

QUEENSLAND RAILWAYS.—A gradual extension of the Queensland railways is one of the early developments most likely to take place without much fuss. Not a big railway scheme, but a steady pushing out of the present system. The development of the mining and agricultural industries fully warrants it. The increase in net revenues of the Queensland railways for past 12 months is £59,000. These figures may appear small, but the population of Queensland is only 470,000.

IRON TELEGRAPH POLES.—The Victorian Postal authorities have at last decided to replace the 100,000 or so

of wooden telegraph poles in use in the colony with Iron ones, and a sum of £15,000 has been placed on the estimates as a first installment toward the expense. Local tenders have been called and refused, on account of the high price asked, the lowest tender being nearly £14,800 for the first batch of 5000, equaling about £2 15s. for 19,-foot poles, and £3 15s. for 24-foot poles. From this it would seem they will have to be imported.

PROPELLER SHAFTS.—Quite an epidemic of broken propeller shafts has been experienced in Australian waters of late, several oversea steamers and intercolonial vessels having had trying experiences of aimless drifting at the mercy of wind and sea of late. These experiences have so much taken the public imagination that all vessels trading here fitted with twin screws are careful to advertise the fact in the daily papers.

The wonder is, seeing the way intercolonial vessels go to sea, "flying light" in heavy weather, that far more screws do not disappear. The question is a serious one, and points to the necessity of efficient governors, or stronger shafting.

THE MASSEY-HARRIS COMPANY, whose name is as familiar out here as in their own native Toronto, are erecting very handsome premises in Melbourne. They are situated in one of the main streets (Bourke street), and when completed will make a handsome pile.

TWO NEW INDUSTRIES have just been started in Victoria, the Paint industry by Paterson Bros., at South Melbourne, and the manufacture of Rubber Goods. by Barnet Glass & Sons, at Kensington, a Melbourne suburb.

The former firm, who have laid down a £2000 plant capable of turning out about 10 tons of Paint weekly, have secured a bonus from the Government of about £600, and anticipate, with the aid of the present duty of £4 per ton on Mixed Paints, and £2 per ton on Dry White Lead, doing a big thing and competing successfully with the imported article.

The second industry, the India Rubber Goods, should also have a fair measure of success, and the firm have already secured several large contracts from engineering firms and the Victorian Railways and Police Departments.

PROJECTED FACTORIES.—With the establishment of Federation and the abolition of Border tariffs between the Australian States, there is not the slightest doubt that new industries will rapidly spring up, and it is within the writer's knowledge that more than one English firm of manufacturers of Iron and Steel Goods are already making inquiries in regard to the establishment, under Federation, of Australian factories.

BRASS BEDSTEADS.—American made goods generally find favor in this part of the world, and some Brass Bedsteads shown me the other day warrant praise as regards make and finish. Your manufacturers, however, will need to be careful in tackling this line, as the local made article can quite hold its own, and is to a large extent supplanting English makes.

THE FARMERS' TRADE.—Melbourne has recently passed through the throes of its annual Agricultural Show, and the various Hardware firms of the city have been exercising all their ingenuity to attract coin from the pockets of the visiting agriculturists to their own. An ingenious contrivance, which bore excellent fruit, was on view at Foy & Gibson's. In order to sell their Pumps, things of much importance in a dry country like this, they fitted a large trough in their Hardware department with a half dozen Pumps at work, so that the farmers could "taste and try before you buy."

WOOL.—The Melbourne wool sales will open to-morrow, and anticipations are high regarding prices. The wool clip will be a light one, but prices will be about 40 per cent. higher than last season. The shrinkage in the output is undoubtedly responsible for this to a large extent. The increased price will enable New South Wales and Queensland growers to tide over present misfortunes consequent on the loss of many millions of sheep through the prolonged drought.

MINE VENTILATION.—The Victorian Government offer of £1000 bonus for a cheap and efficient method of mine ventilating is still open. The board appointed to test the various methods is still at work, but has not yet approved any particular scheme.

FEDERAL TARIFF.—The various Australian Chambers of Commerce are to meet in Melbourne November 6, for several days, to draw up recommendations for a suitable Federal tariff. A forecast of an all round protective tariff of 20 per cent. will not be far wrong, and it is expected to come into operation about two years from date. With the above duties it is confidently expected that there will be plenty of foreign capital available for the working of the mineral deposits of Australia.

Australian Wood Chopping Contest.

WE are advised by the Kelly Axe Mfg. Company, Alexandria, Ind., that in the international wood chopping contest in Queensland, Australia, on August 9, all three first prize winners used Kelly Axes. Their office in New York is at 82 Chambers street, in charge of W. H. Trabue. A large export demand is referred to as one of the features of their business this year.

James H. Baker Mfg. Company.

THE new plant of the James H. Baker Mfg. Company, at Tarentum, Pa., which has been in course of erection for some time, is practically completed, and has been put in operation. The concern will manufacture Car Irons, Wagon Hardware, Air Brake Forgings, and will do drop forging work of all kinds. The new plant of this concern is referred to as being one of the most complete of its kind in the country, and one department will be devoted exclusively for doing work to order. The officials of the James H. Baker Mfg. Company are H. M. Brackenridge, president; O. C. Camp, secretary and treasurer, and James H. Baker, vice-president and general manager. Mr. Baker is the original maker of the Baker Wagon Hardware, Baker Chain, &c., which goods have been known to the trade for many years.

The Goulds Mfg. Company.

THE Goulds Mfg. Company, Seneca Falls, N. Y., have completed plans for the erection of a number of new buildings, which will materially increase their facilities for the manufacturing of Pumps and Hydraulic Machinery. The buildings will be substantial brick structures and will include a machine shop 258 feet in length by 100 feet in width, boiler house 44 x 67 feet, a foundry 122 feet in depth by 85 feet in width, and a pattern warehouse 78 x 30 feet; also coke and sand sheds of suitable dimensions. The buildings will be one story in hight, and supplied with all the latest improved machinery. Side tracks from the New York Central Railroad will be run around the buildings, and every facility provided for loading and unloading cars. When completed and in operation the new buildings will give employment to a largely increased number of employees. They will cost from $50,000 to $60,000, and work upon them will be commenced in a few days.

Tool Chest Catalogue.

AMERICAN TOOL CHEST COMPANY, 200 West Houston street, New York, have issued Illustrated Catalogue No. 19, a reference to which was made in the last issue. In the catalogue are shown Tool Chests in great variety for boys, youths, gentlemen, housekeepers, carpenters, farmers and planters, together with chests adapted to railroad and mine use. There are also empty Tool Chests for machinists and pipe fitters. The Chests filled with Tools list from $12 a dozen to $300 apiece, and are suitable for amateurs or professionals.

Evans & Hume, Brownsville, Ore., in view of the large increase in their business, are putting up a 60-foot addition. They are retailers of Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c.

Trade Winning Methods.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

A NOVEL WAY OF ATTRACTING TRADE.

A Hardware firm in Indiana have two unique methods of effectively reaching possible purchasers. They make a record of all accessible death and birth notices in the newspapers.

METALLIC GRAVE DECORATIONS.—As a matter of propriety and to avoid any unseemly haste the firm do not mail the following circular until five or six weeks elapse after the appearance of a death notice. The circular with an illustration of a wreath, the business heading of the firm and appropriately signed, is as follows:

The undersigned call your attention to their large assortment of

METAL WREATHS,

a most appropriate and desirable decoration for graves.

The assortment comprises WREATHS, CROSSES, ANCHORS, BASKETS. Etc., in all white, and also in natural colors of the various flowers—such as

CAMELIAS,
ROSES.
LILIES,
IVY, Etc., Etc.

You are invited to examine them, as they should be seen to form an idea of their artistic beauty.

BABY CARRIAGES.—In the other instance they send out a circular relating to Baby Carriages about four weeks after a notice of birth appears. At the top of the circular is an illustration of a Baby Carriage with printed matter, with the firm's name and address. The circular is as follows:

Just bought DIRECT from different FACTORIES for SPOT CASH the latest styles of

BABY CARRIAGES,

which we offer at REMARKABLY LOW PRICES for CASH. Please call and examine our stock and prices.

Both of these methods are referred to as working successfully and amply justifying the attention given to cultivating trade in this way.

STOVE ADVERTISEMENTS.

King & Weaver of Ligonier, Ind., have adopted an effective plan to impress the public with the superiority of the Ranges handled by them.

HALF-TONE PORTRAITS.—This is accomplished by a series of advertisements, each containing a testimonial from a lady whose portrait in half-tone is given. From 12 to 15 portraits and testimonials are thus used during the Stove season.

THE ADVANTAGE.—Regarding the advantage of this plan the firm allude to the testimonial as more convincing than anything the merchant could say, while the portrait attracts attention and adds force to the announcement.

CHANGING ADVERTISEMENTS.—There are two local papers in Ligonier, published weekly, and the firm change their advertisement each week. An ad. is run in one paper one week and the same ad. in the other paper the next week. In this way no issue of either paper is without their advertisement.

BICYCLE ADVERTISING.

King & Weaver, Ligonier, Ind., have made a strong bid for the Bicycle business of the town for next season. Large circulars were recently issued by them, headed as follows:

FIRST ANNUAL

BICYCLE ROAD RACE

WILL BE GIVEN BY

KING & WEAVER of Ligonier,

ON

Saturday, Sept. 23,

At 3:00 o'clock, P. M.

THE COURSE.—The start and finish were both in front of the firm's place of business, and three judges decided who the winners were.

RESTRICTIONS.—Only those who had bought Wheels of the firm, and who still had the Wheels in their possession, were allowed to enter the race. Each contestant was to ride his own wheel.

PRIZES.—Ten prizes were offered, from a Bicycle valued at $35 to a pair of Wire Toe Clips at 25 cents. The total value of the prizes was $47.

EXPENSE AND RESULTS.—The total expense was $50, including a band of music. There were 19 entries for the race, and as an advertisement it was considered a success. An event of the same kind will be given in 1900 under the auspices of the firm.

A GOOD INVESTMENT.—The race was not announced early enough in the season to effect sales this year, but as a result the firm expect to sell 100 Bicycles next year in their town, and to get better prices than in the past. They also expect the advertisement will aid them in making contracts with manufacturers.

POSTAL CARD INQUIRY.

In connection with efforts to secure trade our attention has been called to the use of postal cards which are sent out to builders, foundries, factories, contractors, &c. Each postal card is accompanied by a circular, as follows:

Dear Sir:

We herewith write to ask you to kindly give us an opportunity to quote you prices on anything in our line.

We can promise lowest possible prices and prompt service. Kindly return the enclosed postal card with replies to questions asked, and oblige.

The postal card is printed as shown below, leaving blanks for replies:

Do you buy goods in our line? .....

Have you a copy of our Complete Catalogue with discounts? .....

Would you object to our calling on you? .....

Whom shall we see if we call? Mr. .....

Will you give us an opportunity to bid on such goods as you use in our line? .....

This method of winning trade is referred to as attended with excellent results.

Expert Criticism of Hardware Advertisements.

WE herewith reproduce in reduced form some carefully prepared advertisements of prominent Hardware merchants, with criticisms from several gentlemen who have given special attention to the matter of advertising, some of whom are professional writers of advertisements, and others successful and intelligent Hardware advertisers. The writers, whose names are withheld, are designated by the initials A. B., E. F., G. H., I. J. and K. L., which are given in connection with their comments.

Fly time

..SUGGESTS..

Window Screens.

Our *Screens* will fit any *window* in your house.

They are made of hard wood.

They are finely polished.

They beautify and give finish to the window.

They do not stick when opening.

They are easily adjusted.

An inspection will confirm what we say.

The prices range from 20 cents to 50 cents each.

Williams' Hardware Store,
57 Main Street.

E. F. SAYS: I like this ad. The picture is a neat and agreeable one to look at and the heading hits the target the first pop. Here is an ad. that contains all the information any one would want about Window Screens. Ask any question you will about Window Screens and you will find your question answered in this ad. If you were seated at your table at home trying to read your morning paper and the flies were annoying, and your eyes should alight upon this ad. your attention would at once be arrested. You would read the suggestion at the top of the ad. Then you might wonder if these Screens would fit your windows. Read the next line and your question is answered. Your next thought would probably be, what are these Screens made of, and the second line answers your question. Then you will begin to wonder what the price is, and the last line in the ad. answers this question. When an ad. arrests the reader's attention and gives him all the information he wants about the article advertised, in a clear cut, brief way, it is a good ad. and will bring business.

K. L. says: A border extending from the cut down the sides and across the bottom would have been effective here. The advertisement is excellent.

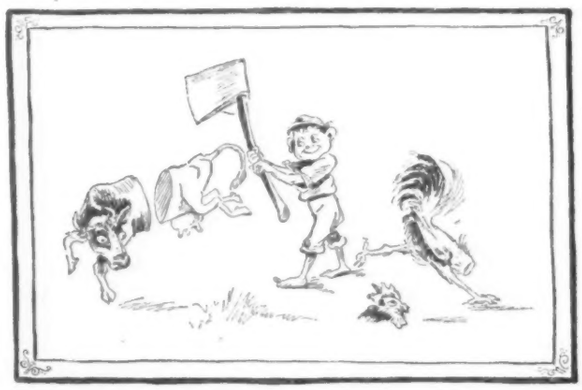
G. H. SAYS: This is a sensible, well written advertisement. The information conveyed is pithy and to the point, and twice as many words would not tell the story any better. A few concise sentences mention all the advantages of these particular Window Screens, including prices, and the matter is well arranged as to type and illustration. The space occupied by this advertisement is well used.

A. B. SAYS: Cut and subject matter excellent, and with sizes and prices only would have been more effective.

Leaving out the statement that they beautify and give finish to the window—which they do not—it is a speaking advertisement, and a truthful one.

I. J. SAYS: Good, sound, ordinary, every day sort of an ad.

—o—



OUR Meat Cutters do the work. They convert ancient cows into modern steak and remove the "stubborn" qualities from "the oldest inhabitant" of the barn yard.

OUR Meat Cutters must be seen to be appreciated. They are now ready for inspection. The line is complete and the prices right.

E. D. SLEDGE, - Athens, Ga.

E. F. SAYS: This illustration is all right to attract attention, but it is hardly appropriate to advertise Meat Cutters with. The statement that "They convert ancient cows into modern steak" is not truthful, and therefore it takes all the good out of the ad. Had the writer said instead that porterhouse steak costs so much per pound and round steak could be purchased for 10 cents, and after being put through the meat mill, a tender meat ball could be made and served in a cream gravy, it would have been a far better ad. This statement could be followed up with an offer to let any lady in Athens try one of the mills.

G. H. SAYS: If it could be demonstrated that the modern steak is to be discovered by the aid of any particular Meat Cutter on the worn and wasted frame of the barnyard's oldest inhabitant, it is certain that such a Meat Cutter would be very much in demand. Even the cows, or at least the younger ones, would be glad of its advent.

A plain statement of the real advantages of a Meat Cutter, however, would be a far better method of creating a demand for it. Facetiousness is not convincing, and is not looked for, as a rule, in the advertising columns. If, as the above advertisement states, the prices are "right," it would be an advantage to mention them.

A. B. SAYS: The cut is no doubt original, but will scarcely sell the goods that would go through the medium of an accurate cut of a good machine for the purpose. It lacks, too, mention of any line, and no sizes or prices are given.

I. J. SAYS: Should quote prices; 50 per cent. of the pulling quality of an ad. is lost when the price is not quoted. Do not believe in funny pictures in an ad. any more than to have one of the clerks joke with a customer when he comes in to buy goods. Most people read ads. to find out where they can get the best value for their money—not to be amused. The only merit of

this ad. is that it (the picture) will attract attention, but what is the use of attracting attention unless you sell goods by it ?

K. L. says: No person who relishes good steak or tender fowl would care to partake of either after having seen such an illustration as this. The text is equally obnoxious. The only redeeming feature here is the plain simplicity of the typography.

ADVERTISING FOR PROFIT.—No. 8.

BY H. C. W.

THE CONDUCT OF A BUSINESS is in itself largely responsible for the success or nonsuccess of its advertising. The writer has tried to show how much of good and how much of profit may emanate from the office as a source of constant advertising, and is a firm believer in the fact that every man on the floor may do his share. He will not do it if his every effort is toward getting through with the customer, throwing the goods on the shelves, growling at an extra bit of labor and breaking for the outside at the meal or closing hour, regardless of the little undone things that if done make him valuable and are more than noticeable.

Please the Public.

AND THEY'LL TALK OF YOU to the extent that it is your very best advertisement. Keep giving them something new to talk of in the arrangement of your store, in taking up new lines, in handling what other stores do not handle, in getting what they want when you do not have it, in your better knowledge of their wants than the other man, in the good address of your clerks as compared with others, in the arrangement of your stock, your showcases and your wall cases, in the clever arrangement of your

Show Windows,

and these latter are not the least, by any manner of means. As an advertisement

THEY ARE NOT EQUALED. As a silent salesman when rightly treated, every man with experience knows their worth. Overcrowding spoils them as nothing else possibly can. A few good things at a time are enough and often better only one, and with that one or with all of them always the price. Price on anything, price on everything, and half the work of selling is done; sometimes all of it, for many goods are brought from your doorway, laid on your counter, the price with them, and all that is asked is the wrapping up.

Buy Bargains

AND LET IT BE KNOWN you buy them; then give them just as freely. They need not necessarily be shoddy because cheaper than your neighbor's. Good sound judgment will lead a man right in what he buys as in anything else. Bargain counters need not in any way partake of the 5 and 10 cent stores or the department store. They may be made up in part of stock not salable at a full or a present value, and the fact that you are known to have them is certainly a long card and a strong card in advertising that costs you less than any other class.

Take a Trip.

GET OUT OCCASIONALLY to other towns and other stores; see how other merchants do business. No one of us has it just right, and I doubt not each one of us can learn enough to justify the time and expense of going. Then the knowledge that you go and that you improve each time you go is in itself a clever advertisement with a much larger class of people than is dreamed of. People like to patronize merchants who are up to date and willing to learn.

Have Your Clerks Posted.

HAVE THEM KNOW all about the goods they seek to dispose of; who makes them, where made, how made and of what material. Nothing so attracts a prospective buyer as to find a salesman who is able to talk to him in this way. No one thing will drive him out so quickly as to drop on to the fact that he is a paid ignoramus on the subject. In a tool department it costs but little time to know the mechanism of a ratchet drill, a chuck or a wrench, or in the sporting goods corner to know—and be able to tell it—the inner parts and construction of one make of gun as compared with another make; and every customer leaving your store is bound to speak of the cleverness of this man.

Return the Money,

AND WITHOUT ARGUMENT, when goods are brought back as unsatisfactory. It's a little bit hard to do it with a smiling face, to see it go back after having once owned it, and yet that one thing has founded the fortune of some of the best merchants this country knows to-day. We may occasionally be imposed on, but even the impostor will talk of it. If it is not done pleasantly the man is ever after your enemy; so is the woman. And the damage done in their repetition of the deal cannot be estimated. On the other hand, the pleasant return and the "come again" is just as liable to bring dozens as the one interested, and your advertisement is made.

Your Customers

ARE YOUR BEST ADVERTISERS always. It is sometimes pretty hard to get this fact through the heads of employees, but it is as true as that the sun rises.

TREATMENT OF CHILDREN.—Have you noted how much of a stir is created at the perhaps unintentional injuring of a child's feelings or the rude neglect because it happens to be a child ? Do you know the woman doesn't live who ever forgets or forgives an injury at the hands of employer or employee ? Years after you will hear of it through the medium of some near neighbor to whom she has gone with her woe.

COURTESY.—It's an awfully safe rule and a splendid advertisement to never for a moment allow argument or dictation with a customer, to ever and always treat the child with courtesy and kindness and insist on having it done, and in fact to yourself set the example of being a gentleman always. It doesn't cost anything and it's forever the sowing of good seed.

Your Competitor

SHOULD BE YOUR FRIEND. If he will not then perhaps you cannot, but it's wise to do our best to that end. Enmity at least need not be created as far as you are concerned. There is no question but that both can do more business, can make more money, when on good terms than the reverse. There is no question but that a friendly state of affairs permits exchange of favors that never come in its absence. But if it must be and he must talk of his neighbor, it's a pretty good advertisement for the other man that he keeps quiet. He rather has the best of it, and as most people will learn the truth he is also getting a good deal of free advertising. A man who can keep on good terms with his neighbors and competitors is a pretty safe man to buy goods of.

Jacob Holst, who has been in this country for several months, will sail for Hamburg on his return home November 9. He is the buyer for the importing house of Oscar A. Nissen, who deals almost exclusively in American Hardware, Copenhagen, Denmark, which through a corps of traveling salesmen is distributed to dealers in Denmark, Norway, Sweden, Finland and Russia, the house having men on the road all the time. Their trade is confined to Shelf Hardware and light Machinery of American manufacture. Mr. Holst has visited 250 factories since he has been here, this being the last of several trips extending over a term of years. Copenhagen is a free port, which facilitates the transshipment of goods to other countries. Mr. Holst, in addition to the Scandinavian language, speaks German, French, Russian, Finnish and English. He considers the outlook for the introduction of American goods in Northern Europe very promising.

National Hardware Association.

A MEETING of the various committees appointed by the Pittsburgh manufacturers to entertain the members of the National Hardware Association at their convention in Pittsburgh on November 15, 16 and 17 was held on Monday evening, November 6, and arrangements for the entertainment of the guests were practically completed. The statement that Thomas B. Reed had been secured to make an address at the banquet to be given at the Hotel Schenley on Friday evening is erroneous. Efforts were made to secure Mr. Reed, but without success. Judge Buffington has been appointed toastmaster. It has finally been decided not to hold the reception at the Duquesne Club on Wednesday evening, November 15, but in its stead the smoker, originally planned, will be given at the Monongahela House on that evening. The chairman of the committee in charge of this smoker is J. W. Hubbard of Hubbard & Co. A royal time is assured to those who will be in attendance. The trip to the Edgar Thomson Steel Works, at Bessemer, on Thursday evening, to witness the process of rolling rails, is expected to be a very pleasant and profitable one. Guides will be furnished for the different parties by C. M. Schwab, president of the Carnegie Steel Company, Limited. A special train will take the members to the works on either the Pennsylvania or Baltimore & Ohio Railroad.

Trade Items.

TAPLIN MFG. COMPANY, Forestville, Conn., have opened a New York office at 90 Chambers street, in charge of Arthur H. Burdick. They will carry a full stock of Bathroom Fitures, of which they are making an interesting and attractive variety.

THE BELDING-HALL MFG. COMPANY, Belding, Mich., have purchased the plant of the Sanitary Refrigerator Company, also at Belding. They will run this new factory on Refrigerators and Screen Doors. It will be known as factory C. Their factory A will be operated on Refrigerators exclusively. Factory B will make Stove Boards and Refrigerators. The factory which they have just purchased is a fine brick building, three stories high, covering a ground space of 80 x 200 feet. They have also built another warehouse, 80 x 310 feet. They have further purchased another saw mill in Northern Michigan with nearly 6000 acres of timber land, including a great deal of ash and pine. The pine will be used in their Screen Door business. These enlarged facilities will give the company a monthly capacity of 7500 Refrigerators. Their main sales office is at 229 Franklin street, Chicago.

WESTERN wholesale Hardware merchants have distributed 160,000 copies of the editorial entitled "Terms, Net Cash in 30 Days," which appeared in *The Iron Age* of September 14. It was sent to retail dealers and manufacturing consumers of iron and steel.

THE GENERAL SUPPLY COMPANY, 40 John street, New York, are an incorporated company recently organized to deal in Machine Tools and Factory Supplies. They are composed of R. F. Manning, the son of H. S. Manning of Manning, Maxwell & Moore, and W. C. Squier, 3d, both of whom are grandsons of the principals of the old firm of Manning & Squier, 111 Liberty street, late agents of the Passaic Zinc Company.

IN their advertisement Folding Paper Box Company, South Bend, Ind., direct attention to their Brownfield filing system, designed to facilitate easy reference to catalogues, quotations, &c. The merits of their system are evidenced by testimonials from many merchants who have it in use.

RICHARD C. SMITH has been appointed chief of the Washburn & Moen department of the American Steel & Wire Company in New York. Mr. Smith was the assistant of R. K Dana, who for many years was the New York representative of the Washburn & Moen Mfg. Company, Worcester, Mass., Mr. Dana having resigned his position to engage in other business. Mr. Smith is an old employee of the original company, is well known and popular in the trade and will carry with him the best wishes of a host of friends in both the export and domestic trade.

R. A. Cato and George Evertson have bought the interest of R. S. Hill in the firm of P. Y. Hill & Son, Lebanon, Tenn., and the business is being continued under the style of P. Y. Hill & Co. The firm discount their bills and sell goods on a cash basis.

Among the Hardware Trade.

Ludlum & Peck, Port Jervis, N. Y., have dissolved partnership. Charles I. Peck is successor under his own name.

Jackson Bros. have succeeded J. S Wilson, Santa Monica, Cal., in the wholesale and retail business in Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Furniture, &c.

J. A. York & Son, Oblong, Ill., are successors to Hull & York, retailers of Hardware, Stoves and Furniture. The firm have installed new shelving as well as several new showcases in the store.

A. W. Turner, Davenport, Wash., has taken possession of his new building, 50 x 100 feet, two stories and basement, where his facilities for the conduct of business are materially improved. Mr. Turner's trade is mostly retail, but some wholesaling is done.

Mr. Jenkins has retired from the firm of Jones & Jenkins, Garvin, Minn., and E. M. Jones is now carrying on the business under that style in his new building recently completed.

Joel Tilman has disposed of his retail Hardware and Farm Implement business at Silver Lake, Ind., to Anglin & Leonard.

Harvey Chapman has succeeded E. A. Buck & Co., wholesale and retail Hardware, Wooden Ware, &c., Stafford Springs, Conn.

L. J. Vinier, Hardware and Stove merchant, Carthage, N. Y., has purchased a brick building, 60 x 22 feet, which he will enlarge in the spring and subsequently occupy with his business.

The Prowell Hardware Company, wholesale and retail, Birmingham, Ala., have removed from 1912 to 1917 Second avenue.

E. M. Payne has purchased the Hardware, plumbing and tinning business of P. Sutcliffe, San Luis Obispo, Cal., and is continuing under his own name.

Danbury Hardware Company, Danbury, Conn., have leased premises adjoining their store and have merged the two stores into one establishment. The addition is being utilized for the display of Plumbing Material, Stoves and House Furnishing Goods.

Cornell Bros. have succeeded F. W. Weaver in the Hardware, Stove and Sporting Goods business, Ord, Neb. New shelving has been installed in the store and other improvements made, which have permitted a large increase in the stock carried.

Mitchell & Gottlob have succeeded John Denhart in the retail Hardware business at Trosky, Minn.

Harper & Jones, Hardware merchants, Parker, S. Dak., will shortly dissolve partnership and C. L. Harper will remove to Monroe, where he will enter the same line of business.

F. A. & A. J. Meacham, Edgerton, Minn., have commenced the erection of a new store building. The structure will be of pressed brick, will be 50 x 100 feet in dimensions, two stories and basement.

Chauncey Overmyer has succeeded E. B. Collins, retailer of Hardware, Stoves, Farm Implements, Sporting Goods, &c., Fulton, Ind.

Tipton & Shenkle, Churdan, Iowa, have succeeded W. L. Tipton, the latter having disposed of an interest in the business.

H. G. Beach, Alpena, Mich., has leased the store adjoining his premises and thus added largely to his facilities for doing business.

A. Buckley has purchased the Hardware stock of L. Black, Parsons, Kan., and combined it with his own.

C. M. Lambert has purchased the interest of Mr. Bishop in the firm of Beeler & Bishop, Horton, Kan., and the style has been changed to Beeler & Lambert.

S. P. Coan, Brookfield, Mo., has added the J. D. Boyle general Hardware stock to his own at the old stand.

J. H. Pope, Greensboro Bend, Vt., has enlarged his store, so as to be in a better position to handle his increasing business.

Lawrence Hardware Company, Nelson, B. C., are putting up a corrugated iron building which they will utilize as a warehouse. They are wholesalers and retailers.

R. E. Carter, formerly in business at Lexington, Va., has removed to Newport News, where he is now comfortably settled at 308 Twenty-eighth street.

R. H. Cone was burned out in a large conflagration at De Queen, Ark., a short time since. Mr. Cone's loss was about $7000. He is putting in a new stock, including a line of Furniture, and expects soon to resume business. The only survivors of the conflagration were Curfman & Tobin, dealers in Hardware and Stoves, and Riley & Brown, general merchandise.

C. P. Tanner, under the style of Rutherford Supply Company, has succeeded Dixon Hardware Company, Rutherford, N. C. M. O. Dickerson, manager of the former firm, will act in the same capacity for the Rutherford Company.

D. E. Corbin has succeeded Lewis T. Hooker, Angelica, N. Y., retailer of Hardware, Stoves, Implements, Sporting Goods, &c.

W. P. Dilworth, Oklahoma City, Okla., has lately opened up a new stock, comprising Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, Bicycles, &c. Mr. Dilworth will carry on a wholesale as well as retail business.

A. C. Bates & Son, Rutland, Vt., wholesalers and retailers of Shelf Hardware, Sporting Goods, Wagon Wood Work, Belting Mill Supplies, Harness, &c., have been succeeded by A. C. Bates & Son Company, a corporation with a paid in capital stock of $15,000. The company are enlarging the store and adding to the line formerly carried.

The Hawley Hardware Company are successors to the business of Todd & Hawley, San Diego, Cal., wholesale dealers in Shelf and Heavy Hardware, Blacksmiths' Supplies, Farm Implements and Vehicles. The change is one in name only, the management and stock holdings continuing the same as heretofore.

John B. Kirven has sold his interest in but still continues with the Wortham Hardware Company, Wortham, Texas. His partner, J. T. Sanders, is continuing the business under the same style.

Without involving any change in the firm style John C. Justis recently disposed of his interest in the business of E. T. Parks & Co., Parksley, Va., to his son, Wm. R. Justis.

The Lowell-Meservey Hardware Company are successors to the Stark-Lowell Hardware Company, wholesalers and retailers of Hardware, Stoves and House Furnishing Goods, Colorado Springs, Col. B. F. Lowell is president of the company and A. B. Meservey secretary.

E. H. Ellis Hardware Company, Crowley, La., have sold out to McAyeal Hardware Company, who will continue at the old stand.

The Griffin Hardware Company, Rome, Ga., succeeding West & Griffin, have been incorporated with a capital of $30,000. Their line comprises Hardware, Farming Implements, Sporting Goods, Stoves, &c., which are wholesaled and retailed. They are occupying a new store, 44 x 150 feet in size, with a warehouse in rear, 40 x 200 feet, with railroad connection.

Henry & Clayton have succeeded Clayton Hardware Company at Central City, Neb.

George T. Bourne has retired from the firm of Schmidt & Bourne, Marshalltown, Iowa, and C. F. Schmidt will continue the business under his own name.

H. Kohlmeyer's store was destroyed in the recent large fire at Lorain, Ohio. Mr. Kohlmeyer is rebuilding.

Mitchell Bros., Lamoni, Iowa, have sold out their Hardware interests.

J. W. Deitsch has sold out his store at Geneva, Ind., to Deitsch & Zehr.

Paul W. McClure has succeeded Rosborough & McClure at Chester, S. C., wholesalers and retailers of Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting and Electrical Goods, Crockery, Glassware, &c.

John Greenlee has purchased C. C. Brown's interest in the firm of Brown & Brown at Heyworth, Ill., and the style is now Brown & Greenlee.

Strong & Johnstone Company have incorporated under the laws of the State of Washington with a capital of $10,000, to carry on the retail Shelf and Heavy Hardware, Stove and Tinware business at Ketchikan, Alaska. H. C. Strong was formerly in the Hardware line at Port Angeles, Wash., and F. C. Johnstone is connected with the Seattle Hardware Company of Seattle.

Schug Bros., dealers in Hardware, Stoves, Implements, Sporting Goods, Carriages and Wagons, Building Material, &c., Berne, Ind., are erecting at a cost of $6000 to $8000 a brick block, 44 x 120 feet, which they will occupy with their business on completion.

Frank A. Ellis & Son have succeeded Ellis, Son & Stanchfield, Denver, Col., in the Hardware and Stove business.

Hair-Riddle Hardware Company have succeeded Jewell Hardware Company at Grant's Pass., Ore.

Carlton Hardware Company's establishment at Calumet, Mich., was partly destroyed by fire on the 27th ult. The loss was fully covered by insurance. The firm, who do both a wholesale and retail business, are cleaning out damaged goods and replacing with a larger stock.

Bluntzer, Robertson & Co. have purchased the business formerly conducted by H. D. C. Gussett, Corpus Christie, Texas.

G. H. Schweining has succeeded Schweining & Taylor, Davis, I. T.

Ogden-Frank Mercantile Company, Sundance, Wyo., have succeeded N. B. Ogden and Frank Bros., and will continue the wholesale and retail business in Hardware, Stoves, Implements, Sporting Goods, Dry Goods, Clothing, Shoes, &c.

D. A. Geiser has sold a half interest in his business at Vinton, Iowa, to Wm. Gilchrist, and the firm style is now Geiser & Gilchrist. They are just about to take possession of a new double store, which will enable them to increase their stock of Hardware and Farming Implements.

Stevenson & Pollock are successors to L. M. Stevenson at College Springs, Iowa. Mr. Pollock has heretofore conducted a furniture store, and his stock has been combined with that of Mr. Stevenson in a new building 44 x 80 feet in dimensions.

Allen Hardware Company, incorporated with a paid up capital of $9000, have succeeded W. J. Allen, for the past 34 years in business at Bloomington, Ind. The company comprise R. N., J. H. and Oneta Allen, and handle, in addition to Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements and Sporting Goods.

W. A. Rone's Hardware store in Centertown, Ky., has been burned out.

Voris & Cox, Crawfordsville, Ind., have disposed of their Hardware business and will hereafter devote their entire attention to the Crawfordsville Wire Company, of which they are proprietors.

E. D. Sanner, Tremont, Pa., has associated with himself in the general Hardware business his brother, F. W. Sanner, formerly with Seligman & Co., Tamaqua. With the change in firm name to Sanner Bros. the wholesaling as well as retailing of Hardware, Iron, Tinware, &c., will be entered upon.

Sturmer Bros., Port Huron, Mich., have recently completed a large addition to their store.

Davis, Sparger & Co., Pilot Mount, N. C., have removed to Ash Hill, N. C.

The store of Lyman Lawrence & Son, Lexington, Mass., was robbed of $100 worth of Pocket Knives on the 7th ult.

Sengel Hardware Company, Fort Smith, Ark., are successors to George Sengel in the wholesale and retail Hardware, Implement, Stove and Buggy and Wagon business.

Haas, Johnson & Co., Lamonia, Iowa, have succeeded Haas & Hatcher.

R. J. Smith has bought L. A. Wilkin's business at Chrisman, Ill.

Eclipse Hardware Company, Astoria, Ore., have moved their stock of Hardware, Stoves, Tinware, Plumbing Goods, &c., into larger and more convenient quarters.

M. D. Shedd has opened a new store in the Union Block, Winchendon, Mass. Mr. Shedd is handling Shelf Hardware, Agricultural Implements, Seeds, &c.

Bartlett & Chandler, Hamburg, Iowa, have succeeded W. B. Houts, dealer in Hardware, Farm Implements, &c.

S. C. Dinkins & Co., wholesale Hardware, Gainesville, Ga., have sold out to Palmour Hardware Company, and on December 1 will open up in the strictly wholesale line at Atlanta under the style of Dinkins & Davidson with $75,000 capital. The members of the new firm are S. C. Dinkins, E. A. Davidson and H. L. Davidson.

Warren L. Davis has succeeded Frank Klahr as buyer for the wholesale and retail firm of Bright & Co., Reading, Pa.

George H. Buck, connected with the firm of P. A. & S. Small, York, Pa., for more than 40 years, the last 30 years in the capacity of buyer, sustained a stroke of paralysis at his home on September 2, his right side being entirely paralyzed. Mr. Buck's condition is now regarded as encouraging.

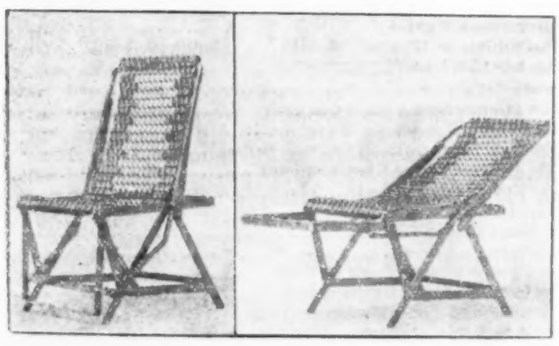
John F. Thomas & Sons, York, Pa., have remodeled the interior of their spacious store.

Hertzog & Heilman, Reading, Pa., are making extensive changes and enlarging their store to accommodate an increased business.

Harry Lichty, formerly with Geo. M. Steinman & Co., Lancaster, Pa., has become associated with the new firm of Herr & Snavely, successors to Isaac Diller's Sons.

The W. I. C. Lawn and Porch Chair.

The accompanying illustration represents the construction and style of a lawn and porch chair put on the market by the Shenango Specialty Works, Sharpsville, Pa. The chair is adjustable, shown in an upright and reclining position and is made of smooth steel. This is a small chair without arms, but it is the expectation of the company to bring out a new design next season of the same construction and much neater.



The W. I. C. Lawn and Porch Chair.

The International Silver Company, Meriden, Conn., have issued a fine engraving, 14 x 11 inches, for gratuitous distribution, entitled "Love that Endures," in connection with which they call attention to "silver plate that wears." At a table covered with wedding gifts of hollow and flat silver plated ware of their manufacture stand a handsome young couple in their wedding dress, engaged in an examination of some of the pieces. In a lower corner of the page is the same couple some 30 or 40 years later scrutinizing in a pleased way some of the same articles.

Ball Bearing Blocks.

The Cleveland Block Company, Cleveland, Ohio, have recently added a full line of ball bearing sheaves and blocks to their catalogue, as illustrated herewith, and are actively engaged in introducing them to the trade. Fig. 2 shows the arrangement of the balls and their working, while Fig. 1 illustrates the finished block. The ball bearings are case hardened to insure strength and means have been taken to avoid any lateral motion, resulting, it is explained, in a minimum of wear on the rope and in the block itself. It is stated that ample dynamic tests have demonstrated the superiority of the blocks as to ease in working and that further tests have shown their wearing powers. It is pointed out that this application of the old principle is absolutely new and well protected by patents, and that the ball bearings are as solid on the pin as a plain bushed sheave. Among the advantages offered by ball bearings, it is claimed, are that they render sheaves and swivels stronger and more durable with even less friction than the ordinary roller bushings. This principle is also applied to hooks and swivels made by the company.

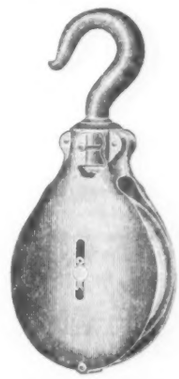


Fig. 1.—Ball Bearing Blocks.

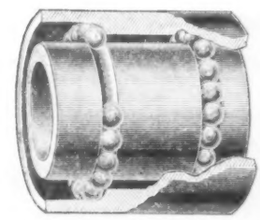


Fig. 2.—Arrangement of the Ball Bearings.

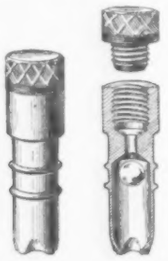
The Horton Rotary Washer.

The Horton rotary washer herewith illustrated embodies a new principle in its operation which is proving decidedly popular. It is operated by a crank attached to a heavy fly wheel. The fly wheel is moved continuously in one direction, while the dasher or pin wheel inside of the machine is so connected with the shaft that it rotates alternately in both directions. Thus the same effect is produced as with the use of the customary lever handle, but with much greater ease for the operator. It is claimed that the machine makes very little noise. The tub is constructed of Louisiana cypress, which is far more durable than pine. All iron parts are neatly fitted and japanned and the wood work is finished in natural wood, making a handsome appearance. C. M Avery & Co., 161 Lake street, Chicago, are exclusive sales agents for the manufacturers.

The Horton Rotary Washer.

The Bown Automatic Tire Valve.

An ingenious yet exceedingly simple valve for bicycle tires has been brought out by the Bown Machine Works, Battle Creek, Mich., which is herewith illustrated. A small rubber ball is used as a plunger. The ball has a runway of sufficient length to enable it to move freely. With a ball as a plunger absolutely no mechanical resistance has to be overcome in filling the tire, but only the internal air pressure is to be pumped against. The instant that pumping is stopped the rubber ball flies back to its seat, checking the outflow of air immediately. The



The Bown Automatic Tire Valve.

harder the tire is pumped the tighter will the valve hold. With this construction a larger space can be provided for the air to flow through than with a metal plunger. It is not affected by dirt, as it has no flat place for the dirt to lodge. The manufacturers claim that it will never need repairing, as the ball will not wear out, and that it cannot get out of order.

The Hollow Grip Horseshoe.

A horseshoe of new design is herewith illustrated, which has been placed on the market by the Hollow Grip Horse Shoe Company, 60 Wabash avenue, Chicago. In designing this shoe it has been the aim of the inventor to produce an article which, while possessing the quality of durability, will afford the horse a secure hold upon the ground or pavement, and at the same time be so constructed as to relieve the muscles and joints from strain and jar. The sole or under side of the shoe is provided with an outer and inner circle, located at a convenient distance apart, extending entirely around the inner and outer edges of the shoe, thereby forming a groove or channel. The two rims serve as calks. The inner rim

The Hollow Grip Horseshoe.

extends below the lower edge of the outer circle at the toe, so that the inner part will first come in contact with the ground as a horse's foot is lowered, and as a means of relieving the muscles of the leg and shoulder from the strain generally experienced the inner rim is made elastic or resilient, and this effect is produced by sloping it inwardly, and it is enhanced somewhat by making that rim relatively thin. The outer rim, it will be seen, is comparatively thick at the toe of the shoe, thereby securing rigidity at this place, which is subjected to violent blows. From this description it will be seen that as a foot is lowered the inner circle will strike the ground, and if the surface is hard it will spring upward, and then the thicker or outer circle will also strike the ground, but the blow will be materially lessened, and to such an extent as to cause no harm to the horse.

The manufacturers claim for this shoe, as compared with ordinary shoes, that it is cheaper, because it can be fitted without heating; it wears longer and has no calks to sharpen; that it is less liable to cause accident to a horse, because it cannot get caught in crossing railroad tracks, cable slots, &c; that a horse cannot interfere or cut himself; that it prevents a horse slipping on smooth pavements or ice; that it gives the horse absolute relief from jar and strain of the muscles of the leg or shoulder; and that by its peculiar construction and elasticity the inner circle gives the horse greater ease in traveling, and very greatly increases the knee action.

CONTENTS.

	Page.
The Mahoning Iron Mine. Illustrated	1
Physical Characteristics of Malleable Cast Iron.—I	4
President Diaz on Mexican Industry	7
The Sargent Company's New Works. Illustrated	8
The Pittsburgh Molders	9
A Curious Experiment in Punching a Plate. Illustrated	9
"The Age of Nickel Steel"	10
Bids for New Cruisers	11
Canadian News	11
The Foundrymen's Association	12
The American Pneumatic Armor Plate Scaling Machine. Illus.	13
Central Pennsylvania News	14
Large Interests Removing from Chicago to New York	14
Higher Freights on Iron and Steel	14
American and European Export Methods	15
Peru as a Producer of Copper	16
Editorials:	
A Peculiar Situation in Chicago Building Trade	17
Molding Machines and Union Labor	17
One Effect of Consolidation	17
Some Notes of Experience with Rails	18
The Philadelphia Steel Company	18
Personal	18
Lake Iron Ore Matters	19
The Hibbard-Rodman-Ely Safe Company	19
The War Department and Contractors	20
A Sample Warehouse in Shanghai	21
The Michipicoton Ore Fields	21
An Increase in Pig Iron Production	22
Manufacturing:	
Iron and Steel	23
Machinery	23
Hardware	24
Miscellaneous	24
The Iron and Metal Trades:	
A Comparison of Prices	25
Chicago	25
Philadelphia	27
Cleveland	28
Birmingham	28
Pittsburgh	29
St. Louis	30
Cincinnati	30
New York	30
Metal Market	31
Iron and Industrial Stocks	32
The New York Machinery Market	33
New Terms of Sale in Eastern Pennsylvania	33
Information Wanted	33
The Waukegan Wire Mill Burned	34
The Bar Iron Scale	34
Trade Publication	34
The Atlantic Iron & Steel Company	34
Steel Inspection for the Navy	35
The Iron Trade Outlook in Great Britain	35
The American Steel Hoop Company	35
The Neville Island Plant	35
Hardware:	
Condition of Trade	36
Notes on Prices	37
From a Buyer's Point of View	39
Requests for Catalogues, &c	39
The Chain Consolidation	39
A New Shovel Plant	39
Special Brands	40
Important Investment by Hibbard, Spencer, Bartlett & Co	42
Australian Letter	42
Australian Wood Chopping Contest	43
James H. Baker Mfg. Company	43
The Goulds Mfg. Company	43
Tool Chest Catalogue	43
Trade Winning Methods:	
A Novel Way of Attracting Trade	44
Stove Advertisements	44
Bicycle Advertising	44
Postal Card Inquiry	44
Expert Criticism of Hardware Advertisements. Illus	45
Advertising for Profit.—No. 8	46
National Hardware Association	47
Trade Items	47
Among the Hardware Trade	47
The W. I. C. Lawn and Porch Chair. Illustrated	49
Ball Bearing Blocks. Illustrated	49
The Horton Rotary Washer. Illustrated	49
The Bown Automatic Tire Valve. Illustrated	50
The Hollow Grip Horseshoe. Illustrated	50
Current Hardware Prices	51
Current Metal Prices	58

Current Hardware Prices.

REVISED NOVEMBER 7, 1899.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Cut Prices.—*In the present condition of the market, while many advanced prices are announced by the manufacturers, lower prices are often made by the wholesale trade who have stocks on hand purchased at former quotations.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 6, 1899), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₱ doz. $3.00...33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....₱ ℔ 7¼@7¾¢
Hay-Budden, Wrought.....9¢@9¼¢
Horseshoe brand, Wrought.....9½@9¾¢
Samson.....₱ ℔ 7¾@8¢
Trenton, Wrought.....₱ ℔ 8¼@8¾¢

Imported—

Armitage's Mouse Hole.....8¾@9¼¢
Peter Wright's.....9½@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Augers and Bits—

Common Double Spur.60&10&10@...%
Boring Machine Augers.....60&10&10@...%
Car Bits, 12-in. twist.....60&10@...%
Jennings' Pattern:
Auger Bits.....60@...%
Ford's Auger and Car Bits..40&10@40&10&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list.....40@40&10%
No. 30. R. Jennings' List..50&10@60%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits15&10@15&10&5%
Pugu's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Handers' Bits.....50%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....60&10&10@70&5%

Expansive Bits—

Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....50&10%
Steer's No. 1, $26; No. 2, $18...40@40&5%
Swan's.....40@40&10%

Gimlet Bits—

Common Double Cut..gro. $2.75@3.25
German Pattern.....gro. $5.00@5.50
Double Cut, makers' lists.....50&5@50&10%

Hollow Augers—

Bonney's Adjustable, ₱ doz.....$16.50
Douglass'.....33⅓@33⅓&10%

Ship Augers and Bits—

Ford's.....40&10@40&10&10%
Snell's.....40%
L'Hommedieu's.....15&10@15&10&10%
Watrous'.....40@40&5%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered gro.65@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. 31@34c
Unhandled, Shouldered.gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands.$6.00@6.25
First Quality, other brands$5.50@5.75
Jobbers' Special Brands:
Good Quality.....$5.00@5.25
Best Quality.....$5.50@5.75
Cheap, Handled Axes....$4.75@5.00
Beveled, add 25c doz.
Note.—Jobbers' prices are now usually lower than the manufacturers.

Axle Grease—See *Grease, Axle.*

Axles—

	Iron.	Steel.
Concord, loose collar	*6¼c*	*6 c*
Concord, solid collar	*6¾c*	*6½c*
No. 1 Common	*6 c*	*4¾c*
No. 1¼ Com. New Style	*5½c*	*5¾c*
No. 2, Solid Collar	*6¾c*	*5½c*
Nos. 7, 8, 11 to 14	*.60&10%*	
Nos. 7, 8, 11 to 14, 100 sets	*.60%*	
Nos. 15 to 18	*.50%*	
Nos. 19 to 23	*.60&10%*	

2% cash 10 days.

Boxes, Axle—

Common and Concord, not turned..lb. 5c
Common and Concord, turned..lb. 6c
Half Patent.....lb. 9c

Balances—

Sash—

Caldwell low list.....25%
Pullman's.....62½%

Spring—

Spring Balances.....50@50&5%
Chatillon's Light Spg. Balances...40&10%
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50%
Chatillon's Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars— Crow—

Steel Crowbars, 10 to 40 lb., per lb...3¼@4c

Beams, Scale—

Scale Beams, List Jan. 12, '88.....35@40&5%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters— Egg—

Standard Co.:
No. 5 Steel Handle Dover. ₱ gro. $6.50
No. 10 Cast Handle Dover..₱ gro. $8.00
No. 10 Steel Handle Dover.₱ gro. $8 00
No. 15 Extra Heavy Steel Handle. ₱ gro. $15.00
Rival, ₱ gro.....$10.00
Taplin Mfg. Co.:

	₱ gro.
No. 50 Small Family size	$6.50
No. 100 Regular Family size	$8.00
No. 102 Regular Family size, tinned	$9.50
No. 150 Large Family size	$15.00
No. 152 Large Family size, tinned	$17.00

Lyon's, Standard size.....₱ doz. $1.75
Wonder (S. S. & Co.).....₱ doz. 75¢

Bellows—

Blacksmith—

Standard List.....70@70&5%

Net Prices.

Inch..	*30*	*32*	*34*	*36*	*38*	*40*
Each	*$4.25*	*4.50*	*5.25*	*5.75*	*6.50*	*7.75*
Extra Length:						
Each	*$4.75*	*5.25*	*5.75*	*6.50*	*7.40*	*8.75*

Molders—

Inch..	*9*	*10*	*11*	*12*	*14*	*16*
Doz...	*$6.75*	*7.25*	*8.50*	*9.50*	*12.00*	*14.50*

Hand—

Inch...	*6*	*7*	*8*	*9*	*10*	*12*
Doz....	*$3.75*	*4.25*	*4.50*	*5.00*	*5.75*	*6.75*

Bells— Cow—

Ordinary goods.....75&10%
High grade.....70@70&10%
Jersey.....75@75&10%
Texas Star.....50&10%

Door—

Gong, Yankee.....55%
Home, R. & E. Mfg. Co.'s.....50&10%
Lever and Pull, Sargent's.....33⅓&10%

Hand—

Hand Bells, Polished.....65@65&10%
White Metal.....65@65&10%
Nickel Plated.....50@50&10%
Swiss.....60@60&10%

Miscellaneous—

Farm Bells.....lb. 2@2½c
Steel Alloy Church and School.....50&10@60%
Wilmot & Hobbs Mfg. Co., Gongs.65@70%

Belting

Rubber—

Common Standard.....70&10@75%
Standard.....60&10@70%
Extra.....60@60&10%
High Grade.....60@60&10%

Leather—

Extra Heavy, Short Lap.....50&10%
Regular Short Lap.....60@60&5%
Standard.....60&10@60&10&5%
Light Standard.....70&10%

Cotton—

Rossendale-Reddawag B. & H Co.:
Sphinx Brand.....60&10%
Durable Brand.....70%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Brettell Tire Upsetter, $15.....50%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

Bicycle Goods—

Lane's Cycle Hanger.....33⅓&5%
Joan S. Leng's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks— Tackle—

Common Wooden.....75&5@75&10%
Eddy's Steel.....60&10%
Hartz Steel.....50&10%
Ford's Star Brand, Self Lubricating..70%
Hollow Steel, Ford's Pat. Star Brand.....50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards, Stove—

1899 List:
Zinc.....30%
Crystal and Embossed.....40%

Bolts—

Carriage, Machine, &c.—

Common, list Jan 30, '95.....50@50&10%
Norway Iron, $3.00, list Oct. 7, '84...75&10@75&10&5%
Phila. Eagle, $3.00 list...75&10@...%
Bolt Ends, list Jan 30, '95.....50&10@...%
Machine, list Oct. 1, '99..50&10@...%
NOTE.—*Jobbers' prices on Bolts are now generally lower than manufacturers'.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.33*	*.35*	*.45*	*.57*	*.80*

Cast Iron Spring Foot:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.25*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.85*	*1.20*	*1.50*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.60*	*.90*	*1.15*

Wrought Barrel Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz	*$0.44*	*.50*	*.61*	*.70*	*1.28*

Wrought Barrel.....70&10@75%
Wrought Barrel, Bronzed.50@50&10%
Wrought Flush, B. K.....50&20@70%
Wrought Shutter.....60@60&10&5%
Wrought Square Neck.60&10&10@70%
Wrought Sunk.....60@60&10%
Ives' Patent Door.....62½@62½&10%

Stove and Plow—

Plow.....50&10@60%
Stove, list August 27, 1898..62½@...%

Tire—

Common, list Feb. 28, '83....60@60&10%
American Screw Company:
Norway Phila., list Oct. 16, '84.....70%
Eagle Phila., list Oct. 16, '84.....75%
Bay State, list Feb. 28, '83.....60%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....70%
Eagle Phila., list Oct. 16, '84.....75%
Eclipse, list Feb. 28, '83.....60%
Port Chester Bolt & Nut Company
Empire, list Feb. 28, '83.....60%
Keystone Phila., list Oct. '84.....75%
Norway Phila., list Oct. '84.....70%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$5.50*	*4.50*	*5.00*	*6.50*
Inch.....		*2¼*		*2½*
Per Doz.....		*$7.50*		*10.25*

Enterprise Mfg. Co.....25@30%
No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.

Boring Machines—*See Machines, Boring.*

Boxes, Mitre—

Seavey's, per doz., $24.00.....25%

Braces—

NOTE.—*Most Braces are sold at net prices.*

Common Ball, American..$1.10@1.20
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford's.....50&10&5%
Fray's No. 70 to 120, 81 to 123, 207 to 214.....50&10&5%
P., S. & W. Co., Peck's Patent.....50&10@60%

Brackets—

Cast Iron, plain.....60&10@70&10%
Wrought Steel.....70&5@70&10%
Bradley's Wire Shelf:
Full cases.....80%
Broken cases.....75&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co.....75@75&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Hoosier.....₱ gro. $22.00@$24.00

Bull Rings—See *Rings, Bull.*

Butts— Brass—

Wrought list Sept., '96...25&5@33⅓&5%
Cast Brass, Tibbott's.....50%

Cast Iron—

Fast Joint, Broad.....45&10@...%
Fast Joint, Narrow.....45&10@...%
Loose Joint.....60&10@60&10&10%
Loose Pin.....60&10@60&10&10%
Mayer's Hinges....60&10@60&10&10%
Parliament Butts..60&10@60&10&10%
NOTE.—*The above prices are often cut by jobbers.*

Wrought Steel—

Loose Joint.....
Table and Back Flaps..
Narrow and Broad..... 70&5@
Inside Blind..... 70&10%
Loose Pin.....
Loose Pin, Ball and Steeple Tip....80@80&5%
Bronzed Wrought Narrow and Inside Blind Butts.....50&10@50&10&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....10%
1200 series.....40%
200, 300, 600 and 900 series.40&10@50%
Hendryx Bronze:
700, 800 series.....40&10@50%
Hendryx Enameled.....40&10@50%

Calipers—See *Compasses.*

Calks, Toe—

Burke's, One Prong, Blunt..5¢.....5%
Burke's, One Prong, Sharp..6¢.....12½%
Burke's Two Prong, Blunt..6¢.....12½%
Burke's Two Prong, Sharp.7¢..10&5&5%

Can Openers—See *Openers, Can*

Cans, Milk—

Buffalo Pattern:	5	8	10 gal.
	$3.60	$4.00	.33⅓%
Illinois Pattern.	$2 00	3.10	3.50..33⅓%
Iowa Pattern.	2.25	3.35	3.75..33⅓%
	20	30	40 qts.
New York Patt'rn	3.75	4.20	4.40..33⅓%
Baltimore Patt'rn	2.60	2.90	3.03 net

Cans, Oil—

Galvanized Blue Band, 1-gal., ₱ doz. $1.60@$1.80
S. S. & Co., Galvanized Family with faucet, 3-gal., ₱ gro. $54; 5-gal. $63; 10-gal., $120.00
Glass Oil.....₱ doz. $1.90@$2.20

Caps—Percussion—

Eley's E. B.....50c
G. D.....per M $2@$3c
F. L.....per M $7@40c
G E.....per M $7@50c
Musket.....per M $7@60c

Primers—

Berdan Primers, $1.00 .....5%
B. L. Caps (Sturtevant Shells) $1.00 .....5%
All other primers.....*$1.10@$1.12*

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

B. B. Caps, Con., Ball Swgd.....*$1.90*
B. B Caps, Round Ball...*$1.12@1.18*
Blank Cartridges:
32 C. F., $5 50.....10c&5%
38 C. F., $7 00 .....10c&5%
22 cal. Rim, $1.50.....10c&5%
32 cal. Rim, $2.75.....10c&5%
Central Fire 25%
Pistol and Rifle.....15c&5%
Primed Shells and Bullets.....15c&5%
Rim Fire Sporting.....50%
Rim Fire, Military.....15c&5%

Casters—

Bed.....60c&10%
Flat .....60c&10%
Plate, part Brass....60c&10%
Philadelphia.....60c&10%
Extra 10% often given.
Martin's Patent (Phoenix) ....60@60&5%
Payson's Anti-friction Furniture.70&10%
Payson's Anti-Friction Truck....70&10%
Standard Ball Bearing.....45%
Tucker's Patent, low list.....50@50&5%

Cattle Leaders—

See *Leaders, Cattle.*

Chain—

American Coil, Full Casks:

3-16	1/4	5-16	3/8	7-16	1/2	9-16
8.75	6.85	5.85	5.00	4.85	4.75	4.65
5/8	3/4	7/8	1 inch.			
4.50	4.40	4.40	4.40			

Less than Cask lots add 1/4@1/2c per lb.
German Coil, list July 24, '97 .....
60&10@60&10c&10%
German Halter Chain, list July 24, '97.....60&10@60&10c&10%
Trace, Wagon and Fancy Chains, list April, '98.....50c&10@50c&10c&5%
Jack Chain, list July 10, '93:
Iron.....50c&5@60%
Brass .....50c&5@60%
Gal. Pump Chain.....*lb. 5@5½c*
Breast, Hitching and Rein Chains.
Covert Sad. Works.....50%
Covert Mfg. Co.:
Breast.....35&2%
Halter.....35&2%
Heel.....35&2%
Rein.....35&2%
Stallion.....35&2%
Oneida Community:
Eureka Coil and Halter...60&5@45&5%
Niagara Coil and Halters.60&5@65&5%
Niagara Cow Ties.....50&5@ 55&5%
Am. Coil and Halters....50&10&5@60%
Am. Cow Ties.....45@50%

Chalk—(From Jobbers.)

Carpenters', Blue.....*gro. 50@58c*
Carpenters', Red .....*gro. 40@42c*
Carpenters', White.....*gro. 36@38c*
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—

Bardsley's.....40&10%
Columbia.....50&10%
Eclipse.....60@60&10%

Chisels—

Socket Framing and Firmer

Standard List.....70c&10@75c&10%
Buck Bros.....30%
Charles Buck.....30%
Swan's.....75@75&5&2½%
L. & I. J. White.....30@30&5%

Tanged—

Tanged Firmers.....40c&10@50%
Buck Bros.....30%
Charles Buck.....30%
L. & I. J. White, Tanged.....25&5%

Cold—

Cold Chisels, good quality.lb. 14@16c
Cold Chisels, fair quality.....*lb. 12c*
Cold Chisels, ordinary.....*lb. 8@9c*

Chucks—

Beach Pat., each $8.00.....20%
Skinner Patent Chucks:
Combination Lathe Chucks.....40%
Drill Chucks, Patent and Standard 30%
Drill Chucks, New Model..... 2 %
Independent Lathe Chucks.....40%
Improved Planer Chucks.....20%
Universal Lathe Chucks.....40%
Face Plate Jaws.....35%
Union Mfg. Co.:
Combination.....40%
Czar Drill 30%
Geared Scroll.....33⅓%
Independent.....40%
Union Drill.....30%
Universal.....40%
Face Plate Jaws.....35%

Clamps—

Adjustable, Hammers'.....20@20&5%
Adjustable, Stearns'.....30%
Cabinet, Sargent's .....45&10%
Carriage Makers', P., S. & W. Co..40&10%
Carriage Makers', Sargent's.....50&10%
Beaty, Parallel..... 33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners, Walk—

Star Socket, All Steel....₱ doz. $4.00 net
Star Shank, All Steel....₱ doz. $3.75 net

Cleavers, Butchers'—

Foster Bros.....30%
New Haven Edge Tool Co.'s..40@40&5%
Nichols Bros., Flat hdl., 30%; Rd. hdl., 40%
Fayette R. Plumb.....25%
P., S. & W .....33⅓&5@33⅓&10%
L. & I. J. White.....25%

Clippers—

Chicago Flexible Shaft Company:
Handy Toilet.....₱ doz. $7.20
Mascotte Toilet .....₱ doz. $8.40
Monitor Toilet.....₱ doz. $9.00
Stewart's Patent.....₱ doz. $10.00

Clips, Axle—

Eagle and Superior ¼ and 5-16 inch.....65c&10@70%
Norway, ¼ and 5-16 inch...65@65c&5%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—

Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.).....
60c&10@60c&10c&10%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—

Brass, Pope & Stevens' list.....40%
Embossed, Gilt, Pope & Stevens' list30&10%
Leather, Pope & Stevens' list..... 40%

Compasses, Dividers, &c.

Ordinary Goods .....70c&10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Call's Patent Inside.....55%
Calipers, Double..... .....65&10%
Calipers, Inside or Outside.....65&10%
Calipers, Wing.....60%
Compasses.....50&5%
J. Stevens A. & T. Co.....25&10%

Coolers, Water—

S. S. & Co.: 2-gal., $14.00; 3-gal., $16.00; 4-gal., $18.50; 6 gal., $23.00.

Coopers' Tools—

See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab.....*lb. 21@23c*
Braided, White, Common, lb..16@17c
Cable Laid Italian..lb. A, 18c; B, 16c
Common India.....*lb. 8½@9½c*
Cotton Sash Cord, Twisted....10@15c
Patent Russia .....*lb. 12 @13c*
Cable Laid Russia.....*lb. 13½@14c*
India Hemp, Braided.....*lb. 14@15c*
India Hemp.....*lb. 9@10c*
Patent India, ...*lb. 10 c*
Pearl Braided, cotton .....₱ lb 16¢
Massachusetts, White .....₱ lb 20¢
Massachusetts, D ab. .....₱ lb 24¢
Eddy-tone Braided Cotton.....₱ lb 18¢
Harmony Cable Laid Italian.....₱ lb 18¢
Ossawan Mills:
Crown, Solid Braided White...₱ lb 17¢
Braided, Giant, White.....₱ lb 16¢
Peerless:
Cable Laid Italian.....16¢
Cable Laid Russian.....13¢
Cable Laid India.....11¢
Braided India.....18¢
Phœnix, White.....17¢
Samson:
Braided, Drab Cotton.....₱ lb 31¢
Braided, Italian Hemp.....₱ lb 31¢
Braided, Linen .....₱ lb 44¢
Braided, White Cotton, Spot...₱ lb 27¢
Silver Lake:
A quality, Drab, 40¢.....15&10%
A quality, White, 35¢.....15&10%
B quality, Drab, 35¢.....15&10%
B quality, White, 30¢.....15&10%
Italian Hemp, 40¢ .....15&10%
Linen, 57½¢.....15&10%

Wire, Picture—

Braided or Twisted .....70@70c&10%

Corn Knives and Cutters—See *Knives, Corn.*

Crackers, Nut—

Little Giant.....₱ gr. $24.00
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....*50%*

Crayons—

White Round Crayons, gross...5@6c
Cases, 100 gro., $4.50@$5.00, at factory.
Metal Workers' Crayons..gr. $2.50
Soapstone Pencils, round, flat or square.....gr.$1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition). gr. $2.00
Case lots 20%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—

Fort Madison, Heavy .....₱ doz. $7.00
Fort Madison, Light.....₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden .....₱ doz. $10.00

Cutters—Glass—

Smith & Heminway Co.....40%

Meat—

American.....30%

Nos.	1	2	3	4	5	6
Each	$5	$7	$10	$25	$50	$60

Connecticut:

Nos.	0	1	8	10	12
each	$1.75	2.25	3.00	3.00	3.50

Enterprise.....25@25&7½%

Nos.	5	10	12	22	32
Each	$2	$3	$2.50	$4	$6

Dixon's, ₱ doz.....33⅓&10%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Hale's, ₱ doz.....60c&10c&10@70%

Nos.	11	12	13
	$27.00	$38.00	$45.00

Home No. 1, ₱ doz. $26.00.....60%
Little Giant, ₱ doz.....33⅓@33⅓&5%

Nos.	305	310	312	340	322
	$35.00	$48.00	$44.00	$74.00	$68.00

Miles' Challenge, ₱ doz.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

New Triumph No. 605, ₱ doz. $24.00.. 33⅓&5%
Woodruff's, ₱ doz 40%

Nos.	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers..... ..25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Cabbage Grater, &c..... .....40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9.55%
Kraut Cutters 36 x 12, 40 x 12.....40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....50@50&10%
Slaw Cutters, 1 Knife, ₱ gr....$15@$18
Slaw Cutters, 2 Knife, ₱ gr...$20@$27

Tobacco—

All Iron, Cheap.....*doz. $4.25@$4.50*
Enterprise.....25@30%
National, ₱ doz. $21.00.....40%
Sargent's, ₱ doz. $24.00.....60@60&10%

Washer—

Appleton's, ₱ doz. $16.00.....
60&10@60&10&10%
Bonney's.....₱ doz. $4.75

Diggers, Post Hole, &c.—

Iwan's Improved Post Hole Auger....40%
Iwan's Perfection Post Hole Digger....
₱ doz. $10.00
Never-Break Post Hole Diggers, ₱ doz. $24.00.....60%
Samson, ₱ doz. $34.00.....25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—

See *Checks, Door.*

Door Springs—

See *Springs, Door.*

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $12; No. 3, $11; No. 4, $12.

Drawing Knives—

See *Knives, Drawing.*

Drills and Drill Stocks—

Common Blacksmiths' Drill..each $1.75@$2.00
Blacksmiths' Self-feeding.....each $3.75@4.00
Bench Drills, Stearns'.....50@50&10%
Breast, Millers Falls, each $3.00..15&10%
Breast, P., S. & W .....30@30&10%
Goodell Automatic Drills..40&5@40&10%
Ratchet, Curtis & Curtis 25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....20@25%
Ratchet, Whitney's, P. S. & W....40&10%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Standard List.....*60c&10&10@70c&5%*

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—

See *Pans, Dripping.*

Drivers, Screw—

Balsey's Screw Holder and Driver, ₱ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9..40%
Buck Bros.....30%
Buck Bros' Screw Driver Bits.....27½%
Champion .....40&10%
Disston's Flat Blade, Electric, &c....70%
Douglass Mfg. Co.....20@20&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay & Parsons' Ratchet.....35%
Goodell's Automatic 50&10&10@50&10&10&5%
Mayhew's Black Handle.....50%
Mayhew's Monarch.....45&10%
New England Specialty Co.....50&10%
New York, Manhattan and Handy...20%
Sargent & Co.'s:
Nos. 1,50,55 and 60.50&10@50&10&10%
Nos. 20 and 40.....60@60&10&10%
Screw Driver Bits.....₱ doz. 50@70¢
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles.....70&10%
No. 66.....75&10%

Egg Beaters—See *Beaters, Egg.*

Emery—*Nos. 4 to 54 to Flour, CF:*

	46 gro.	1.80 gro.	F.FF.
Kegs	*lb. 4½c*	*5 c*	*5 c*
½ Kegs	*lb. 4¾c*	*5½c*	*5½c*
¼ Kegs	*lb. 5 c*	*5½c*	*5½c*
10-lb cans, 10 in case	*6 c*	*6½c*	*5½c*
10-lb. cans, less than 10	*10 c*	*10 c*	*8c*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—

See *Pins, Escutcheon.*

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's .....50&10%

Faucets—

Cork Lined.....*70c&5@70c&10c&5%*
Metallic Key, Leather Lined.....
70@70c&10%
Red Cedar ....*60@50c&5%*
B. & L. B. Co.:
West's Lock, Open and Shut Key50&10%
John Sommer's Peerless Tin Key.... 40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Metal Key.50&10%
John Sommer's Duplex Metal Key....60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined. 50&10%
John Sommer's Common Cork Lined.70%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's Perfection Cedar....40%
Star.....60@60&5%
Star, Metal Plug new list.....40@40&5%
Lockport, Metal Plug, reduced list.60&5%
Self Measuring:
Enterprise, ₱ doz. $36.00 .....40%
Lane's, ₱ doz. $36.00 .....33⅓%
National Measuring, ₱ doz. $36.00....40%

Felloe Plates—

See *Plates, Felloe.*

Files—Domestic—

List revised June 1, 1899.
Best Brands.....*70@70c&10%*
Good Brands.....*75@75c&10%*
Fair Brands .....*75c&10@80%*
Second Quality....*80c&10@80c&10c&10%*

Imported—

Stubs' Tapers, Stubs' list, July 24, '97.....25%

Fixtures, Grindstone—

Net Prices:

Inch,...	*15*	*17*	*19*	*21*	*24*
Per doz.	*$3.30*	*3.55*	*3.75*	*4.50*	*5.25*

Stowell's Giant Grindstone Hanger.....
₱ doz. $6.00@7.00
Stowell's Grindstone Fixtures.....55&10%
P., S. & W. Co.....50&10&10%
Reading Hardware Co.....30&20&10%
Sargent's Patent.....60&10@60&10&10%

Fluting Machines—

See *Machines, Fluting.*

Fodder Squeezers—

See *Squeezers, Fodder.*

Forks—

Aug. 1, 1899, list.
Hay, 2 tine.....*65%*
Hay, 3 tine .....*60@5%*
Manure, 4 tine *70%*
Manure, 5 and 6 tine.....*70%*
Spading.....*70c&5%*
Iowa Dig-Ezy Potato.....65%
Victor, Hay.....70%
Victor, Manure.....70@8%
Victor, Header.....70&12½%
Champion, Hay.....60&20%
Champion, Manure.....70&5%
Columbia, Hay.....66⅔&5%
Columbia, Manure.....70%
Columbia, Spading.....70&10%
Hawkeye Wood Barley 4 tine ₱ doz. $5.00; 6 tine, $6.00.
Plated.—See *Spoons.*

Frames—

Saw—

Red, Polished and Varnished..doz. $1.05@$1.10
White.....*doz. 75@80c*

Screens, Window and Door—

Bonanza Window Screens.....60@60&5%
Phillips' Window Screen Frames..60&5%
Porter's Extension Window Screens. 60&5%
Wabash Spring Adj. Screen.....50%
Warner's Screen Corner Irons, Nos. 0B&00B.....50%

Freezers, Ice Cream—

Qts...	*2*	*3*	*4*	*6*	*8*	*10*
Best.	*$1.40*	*1 60*	*1.85*	*2.30*	*3.00*	*3.90*
Good	*$1 25*	*1.35*	*1.70*	*2.05*	*2 65*	*3.50*
Fair	*$1.00*	*1.10*	*1 30*	*1.75*	*2.30*	*2.90*

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—

	Per 1000 Feet.
Hemp Fuse	*$2.60*
Cotton Fuse	*2.90*
Single Taped Fuse	*3.50*
Double Taped Fuse	*4.70*
Triple Taped Fuse	*5.70*

50%

Gates, Molasses and Oil—

Stebbin's.....*80c&10@80c&5%*

Gauges—

Marking, Mortise, &c......
60c&10@60c&10c&10%
Barrett's Comb. Roller Gauge.....
₱ doz. $6.75@7.85
Stanley R. & L. Co.'s Butt & Rabbet Gauge.....25&10%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....10@10&5%

Gimlets—
Nail, Metal, Assorted, gro. $1.40@1.75
Spike, Metal, Assorted gro. $3.00@3.50
Nail, Wood Handled, Assorted, gro. $4.00@4.50
Spike, Wood Handled, Assorted gro. $5 00@5.25

Glass, American Window
List Jan. 1, 1898.
Small lots from store:
Eastern ..... 80&20%
Western ..... 80&20&5%
From Factory, with Frt. Allowance:
Carloads ..... 80&15%
1000 boxes or more, Gulf Ports ..... 85&10%
3000 boxes or more ..... 80&20%
5000 boxes or more 85%

Glue—Liquid, Fish—
List A, Bottles or Cans, with Brush. 37½@50%
List B, Cans (½ pts., pts., qts.) ..... 33⅓@48%
List C, Cans (½ gal., gal.) ..... 25@45%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Allerton's Axle:
1 lb Tins, ₱ gr. $9.00
3 lb Tin Pails, ₱ doz., $2.00; 5 lb, $3.00; 10 lb, $6.00.
25 lb wood pails ..... ₱ doz. $12.00
Dixon's Everlasting....10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs. ₱ doz. 1 lb $1.20; 2 lb $2.00
Lower grades, special brands, ₱ gr. $5.00@6.50

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
gro.
Peg Patent, Leather Top ..$1.90@5.25
Peg Patent, Plain Top ....$3.50@3 75
Sewing, Brass Ferrule. ....$1.50@1 60
Saddlers', Brass Ferrule ..$1.35@1 45
Peg, Common ..... $1.35@1 35
Brad, Common ..... $1.50@1.75

Halters and Ties—
Covert Mfg. Co., Web.. ..... 45&2%
Covert Mfg Co., Jute Rope..... 45&2%
Covert Mfg. Co., Sisal Rope..... 30&2%
Covert's Saddlery Works', 96 list, Web.. 60&10%
Covert's Saddlery Works, Leather 60&10%
Covert's Saddlery Works, Jute.... 60&5%
Covert's saddlery Wo ks, Sisal..... 60%
Covert's Saddlery Works, Manila.. 60&5%
Covert's saddlery Works, Cotton..... 70%

Hammers—
Handled Hammers—
Heller's Machinists' ..... 40@40&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 40&10%
Pecx, Stow & Wilcox ..... 40@40&5%
Fayette R. Plumb:
Artisans' Choice, A. E. Nail..83⅓&7½%
Engineers' and B. S. Hand..... 50&10%
Machinists' Hammers.. ..... 50&10%
A. E. & A. E., Bell Face Nail...83⅓&7½%
Sargent's C. S. New List. ..... 45@40&10

Heavy Hammers and Sledges—
3 lb. and under...lb. 45c
3 to 5 lb ..... lb. 36c } 75&5@75
Over 5 lb ..... lb. 30c } &10&5%
Note.—Lower net prices sometimes made by jobbers.
Wilkinson's Smiths' .....9½c@10c lb.

Handcuffs and Leg Irons
See *Police Goods.*

Handles—
Agricultural Tool Handles—
Hoe, Rake, Fork, &c. .....50&10@60%
Shovel, &c., Wood D Handle. 50@50&5%

Cross-Cut Saw Handles—
Atkins' 40%
Champion ..... 45@45&10%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted .....gro. $2.25@$3 50
Auger, large .....gro. $2.75@$3.00
Brad Awl ..... gro. $1.40@$1.50
Chisel Handles:
Apple Firmer, gro. ass'd. $2.25@$2 50; large, $2.75@$3.00.
Hickory Firmer, gro ass'd, $2.25@$2.50; large, $2 50@$2.75.
Socket, gro ass'd, Firmer, $1.50@$1.60; Framing, $2.50@$2.75.
File, assorted .....gro. $1.00@$1.15
Hammer, Hatchet, Axe, &c...50&10%
Hand Saw, Varnished, doz. 75@80c
Not Varnished.. . .....55@60c
Plane Handles:
Jack, doz. 25@25c; Jack Bolted.. 55@60c
Fore, doz. 35@38c; Fore, Bolted.. 70@75c

Hangers—
Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Doz	$1.10	1.45	1.80	2.10	2.75

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch	3	4	5	6
Doz	$1.50	2.00	2.60	3.25

Chicago Spring Butt Co.:
Friction ..... 30@30&10%
Oscillating ..... 30@30&10%
Big Twin ..... 30@30&10%
Chisholm & Moore Mfg. Co.:
Advance 55%
Cleveland 60%
Baggage Car Door 50%
Elevator 40%
Railroad 55%
Czar Ball Bearing, ₱ doz. pair $8.50
No. 10 Roller Bearing..doz. pr. 5.50
No. 20 Roller Bearing..doz. pr. 4.50
Nickel 50%
J. G. C. ..... 50&2&10%
Lane Bros.:
Parlor, Standard ..... 40&5&2½%
Parlor, New Model ..... 40&2½%
Barn Door, Standard ..... 60&2½%
Covered ..... 50&10&10%
Special ..... 60&5%
Lawrence Bros.:
Crown ..... 60&10%
New York ..... 60&10@60&10&5%
Sterling ..... 60&10%
McKinney Mfg. Co.:
No. 2, Standard, $18 ..... 60&10%
No. 1, Special, $13 ..... 60&10%
Stowell Mfg. and Foundry Co.:
Badger ..... 60&10%
Baggage Car Door 33⅓%
Climax Anti-Friction ..... 55&5%
Elevator 40%
Interstate 60%
Magic 50%
Matchless ..... 50&10%
Nansen ..... 50&10%
Parlor Door 50%
Railroad ..... 55&5%
Street Car Door ..... 50&10%
Steel, Nos. 300, 400, 500 ..... 45&15%
Wild West ..... 50&5%
Zenith for Wood Track ..... 55&5%
Taylor & Boggis Foundry Co.:
Kidder's ..... 50@50&10%
Van Wagoner & Williams Hdw Co.:
American Trackless ..... 33⅓&10%
Wilcox Mfg. Co.:
Aurora Steel Endless 60%
Bike Roller Bearing ..... 60&10&10%
Bike Steel Endless ..... 60&10&10%
C. J. Roller Bearing ..... 60&10&10%
Cycle Ball Bearing ..... 50&10%
Dye Steel ..... 60&10%
Economical Single Track 50&10&5%
L. T. Roller Bearing 70%
New Era ..... 50&10%
New Richards 60%
O. K. Roller Bearing 70%
Prindle Improved ..... 60&10%
Richards' Improved ..... 60&10%
Richards' Single Track ..... 50&10%
Wilcox Dwarf Roller Bearing ..... 40&10%
Wilcox-Ives ..... 60&10%
Wilcox Tandem Roller Bearing ..... 60&10%
Wilcox Trolley Ball Bearing ..... 40&10%
Wilcox Trolley Roller Bearing..50%
Wilcox Trolley Roller Bearing, Fire ..... 40&10%
Wood Track 60%

Extra 5&10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—
McKinney's Perfect Hasp, ₱ doz. $1.10 40&10%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—
Best Brands .....40¢12½@50¢&5%
Cheaper Brands ..... 50¢10@60¢&5%
Note.—Net prices often made.

Hay and Straw Knives—
See *Knives.*

Hinges—
Blind Hinges—
Lull & Porter:

No.	1	1½	2	2½
Doz. pair	$0 65	.60	.56	.48

1868 Old Pattern:

No.	1	3	5
Doz. pair	$0.74	1.35	2.60

Parker ..... 70@75%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ..... 10%
Reading's Gravity ..... 75&10%
Sargent's, Nos. 1, 3, 5 ..... 66⅔&10%
Sargent's, Nos. 11 & 13 ..... 7 &10@70&10&10%
Wrightsville H'dware Co.:
Acme, Lull & Porter 75%
Buffalo Gravity Locking, Nos. 1, 2 and 5 ..... 75%
Champion Gravity Locking, No. 75.80%
1868, Old Pat'n, Nos. 1, 3 & 5....75&10%
Tip Pattern, Nos. 1, 3 and 5....75&10%
Double Locking, Nos. 20 and 25.70&10%
Empire, Nos. 101 and 103 ..... 70%
Niagara Gravity Locking, Nos. 1, 3 and 5 ..... 75&15&5%
Noiseless, Nos. 50, 60, 65 and 55.75&5%
O. S. Lull & Porter ..... 75&5%
Pioneer, Nos. 060, 45 and 5½ ....75&5%
Steamboat Gravity Locking, No. 10 ..... 80%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets $1.20 ..... 30&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with Latches	$1.90	2.50	4.25
Hinges only	1.30	1.55	3.20
Latches only	0.70	0.70	1.20

New England:
With Latch .....doz. $1.75@1.80
Without Latch ....doz. $1.40@1.45
Reversible Self-Closing:
With Latch .....doz. $1.65@1.75
Without Latch ....doz. $1.30@1.35
Western:
With Latch .....doz. $1.60@1.65
Without Latch ....doz. $1.00@1.05

Spring Hinges—
Holdback, Cast Iron ..... gro. $7.00@7.50
Non-Holdback, Cast Iron ..... gro. $6.00@$6.50
J. Bardsley:
Bardsley's Patent Checking 10%
Bommer Bros.:
Bommer's 40%
Chicago Spring Butt Co.:
Chicago 25%
Garden City Engine House... .. 25%
Keene's Saloon Door 25%
Coleman Hdw. Co.:
Champion Holdback ....₱ gr. $9.00
J. G. C. ..... ₱ gr. $9.00
Nickel ..... ₱ gr. $9.00
Lawson Mfg. Co.:
Matchless Pivot 40%
Payson Mfg. Co.:
Oblique, Dbl. Acting ..... 50@50&5%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr. $12.50
Ideal, No. 4 ..... ₱ gr. $9.00
New Idea No. 1 ..... ₱ gr. $9.00
New Idea, Double Acting 45%
Van Wagoner & Williams Hdw. Co.:
Acme ..... 30&5%
American 30%
Columbia, No. 14 ..... ₱ gr. $8.00
Columbia, No. 18 ..... ₱ gr. $24.00
Crown 30%
Gem 30%
Knoxall ..... ₱ gr. $9.00
Oxford 30%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list Mar. 15, 1898:
Light Strap Hinges..66⅔%
Heavy Strap Hinges..70%
Light T Hinges....50¢10%
Heavy T Hinges...60¢10%
Extra Heavy T Hinges... } *Extra 66⅔%* 20%@25%
Hinge Hasps 45%
Stanley's Corrugated Heavy Strap 70%
Stanley's Cor. Ex. Heavy T. 66⅔%
NOTE.—*Change in base discounts.*
Rolled Plate ..... 70@70&5%
Screw Hook and Strap. } *6 to 12 in..lb 3½@3¾c; 14 to 20 in..lb. 3¼@3½c; 22 to 36 in...lb. 3 @3¼c*
Screw Hook and Eye:
¾@1 inch ..... lb. 5½@5¾c
⅝-inch ..... lb. 6½@6¾c
½-inch ..... lb. 8½@8¾c

Hoes—
Eye—
Scovil and Oval Pattern..60@60&10%
Grub, list Feb. 23, 1899.....65@65&10%
D. & H. Scovil ..... 35@35&5%
Handled—
Aug. 1, 1899, List:
Field and Garden ..... 75&2%
Ladies', Boys', Toy and Onion... 70¢10¢10%
Street and Mortar .....75¢7½¢2%
Cotton ..... 70¢10¢10¢5¢2%
Planters' ..... 70&5%
Weeding 75%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Crucible Garden Hoe..... 75&2%
Ft. Madison Crescent Cultivator Hoe, per doz. ..... 75&10&2%
Ft. Madison Mattock Hoe, ₱ doz....$4.50
Ft. Madison Sprouting Hoe, ₱ doz..$4.80
Ft. Madison Dixie Tobacco Hoe..... 75&20%
Kretsinger's Cut Easy, per doz.... 75&2%
Warren Hoe ..... %

Hog Rings and Ringers—
See *Rings and Ringers.*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow Ware—
See *Ware, Hollow.*

Holders—
Bit—
Angular, ₱ doz. $24.00..... 45&10%
File and Tool—
Nicholson File Holders and File Handles..... ...33⅓%

Hooks—
Cast Iron—
Bird Cage, Reading ..... } .50&10@60%
Bird Cage, Sargent's List... }
Clothes Line, Sargent's List.....35&10%
Ceiling, Sargent's List..... 40@40&10%
Clothes Line, Stowell's ..... 70&5%
Clothes Line, Reading List 65&10@65&10&10%
Coat and Hat, Stowell's ..... 70&5%
Coat and Hat, Reading ..... 70@75%
Coat and Hat, Sargent's List.....35&10%
Coat and Hat, Wrightsville .....65&10%
Harness, Reading List.....70&10@75%
Wire—
Belt .....80&10@80&20%
Atlas, Coat and Hat.....50@50&10%
Wire Coat and Hat:
Acme ..... 60@60&5%
B. B. ..... 70@70&5%
Gem 66⅔%
Bright Wire Goods—See *Wire.*
Wrought Iron—
Box, or Case, Octagon Steel.... doz. $2.10@2.20
Cotton ..... *doz. $1.05@1.15*
Picture, T. & S. Mfg. Co..... 75%
Tassel, T. & S. Mfg. Co..... 50&10%
Wrought Staples, Hooks, &c.— See *Wrought Goods.*
Miscellaneous—
Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50

Grass.....Nos.	1	2	3	4
Best	$1.60	1.75	2.00	
Common	$1.50	1.50	1.50	1.75

Potato and Manure ..... 75&15%
Whiffletree ..... lb. 4¾c
Hooks and Eyes:
Brass ..... 70@70&10%
Malleable Iron .....70&10@75%
Covert Saddlery Works' Self Locking Gate and Door Hook..... 60&10%
Crown Picture..... 50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—
See *Shoes, Horse.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition .....ft. 4¾@ 5¼c
3-ply Standard .....ft. 5½@ 6 c
4-ply Standard.....ft. 6½@ 6¾c
3-ply extra.....ft. 6½@ 7½c
4-ply extra .....ft. 7½@ 8½c
High Grade .....ft. 9 @11 c
Cotton Garden, ¾-in., coupled:
Low Grade .....ft. 5½@6c
Fair quality.....ft. 7 c
Good quality.....ft. 8 @ 8½c

Irons—Sad—
From 4 to 10..... .....lb 3¼@3½c
B. B. Sad Irons..... .....lb. 3½@4c
Chinese Laundry.....lb. 5@5½c
Chinese Sad.....lb. 3¾@4c
Mrs. Potts', per set:

Nos.	50	55	60	65
85@$1.00	78@95c	95@1.10	89@1.03	

New England Pressing..lb.. 3¼@3½c

Soldering—
Soldering Coppers.....lb. 28@30c
Covert Mfg. Co..... 20&2%

Pinking—
Pinking Irons.....doz. 50@60c

Jack Screws—See *Screws.*

Jacks, Wagon—
Covert Mfg. Co., Steel..... 45&2%
Daisy..... 70%
Lockport..... 40@40&10%
Victor..... 60%
Lane's Steel..... 33⅓%

Kettles—
Brass, Spun, Plain, list Jan. 10, '99 15@20%
Enameled and Tea—See *Ware, Hollow.*

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.—
Dick's Butcher Knives..... 40%
Foster Bros.' Butcher, &c..... 30%
Nichols' Butcher Knives..... 50%
Table and Pocket Cutlery and John Wilson's Butcher Knives—Net prices.
Hay and Straw—See *Hay Knives.*
Corn—
Ft. Madison Cut-Easy, ₱ doz.....$3.25
Drawing—
Standard List.....75&5@75&10%
Adjustable Handle..... 25@33⅓%
Bradley's..... 35%
Swan's.....75@75&5&2½%
Watrous..... 30&10@40%
L. & I. J. White..... 20&5@25%
Cautelo's Folding..... 50@50&5%
Hay and Straw—
Blizzard, from Jobbers.....$5.75@6.00
Iwan's Sickle Edge..... ₱ doz. $11.50
Lightning, from Jobbers.....$6.50@7.00
Mincing—
Buffalo..... ₱ gro. $15.00
Smith's, ₱ doz., Single, $2; Double, $3 45@50%
Miscellaneous—
Farriers'..... *doz. $2 00@3.00*
Wostenholme's..... ₱ doz. $3.00@3.25
Knobs—
Base, 2¼-inch, Birch, Rubber tip, gro ..... $1.40@1.45
Carriage, Jap, all sizes..gro. 35@40c
Door, Mineral..... *doz. 78@80c*
Door, Por. Jap'd..... *doz. 85@90c*
Door. Por. Nickel....*doz. $2 10@2.20*
Bardsley's Wood Door, Shutter, &c...10%
Picture, Sargent's..... 70&10%
Snow's Victor..... 50&10%

Ladies—Melting—
L. & G. Mfg. Co..... 60%
P., S. & W..... 40@40&10%
Reading..... 50&10%
Sargent's..... 40@40&10%
Lanterns—Tubular—
Regular Tubular..... *doz. $4.00@4.50*
Side Lift Tubular.... *doz. $4.25@4.75*
Square Lift Tubular..doz. $4.21@4 75
Other Styles.....40¢10@40¢10¢5%
Meyrose Side Lift Tubular, doz. $8.50... 45&10%
Bull's Eye Police—
2¼-inch flash light....*doz. $3.50@3.75*
3-inch flash light..... *doz. $4.00@4 25*
2¾-inch regular..... *doz. $3.25@3.50*
3-inch regular..... *doz. $3.50@3.75*
Latches, Thumb—
Roggin's Latches.....*doz. 35c@45c*

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—
Small.....*doz. 45c; large, 55c*
Covert Mfg. Co..... 45&2%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Dickson:
3 x 4 ft. x ¼ ..... ₱ 100 $11.00
Other sizes, Iron ..... 70&10%
Other sizes, Brass and Bronze 70%
Excelsior ..... 60@60&10%
Payson's:
Solid Grip Nos. 643 and 644, ₱ 100 ..... $11.00
Bronzed Iron 70%

Lines—

Wire Clothes, Nos...	*18*	*19*	*20*	
100 feet	*$2.50*	*$ 25*	*2 00*	
75 feet				*$1.50*

Ossawan Mills.
Crown Solid Braided Chalk 33⅓%
Mason's, No. 0 to No. 5 ..... 33⅓%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gr. 30%

Locks, &c.— Cabinet—

Cabinet Locks ..... *33⅓@33⅓&7½%*

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Reading Hardware Co. 40%
R. & E. Mfg. Co. ..... 40& 0%
Sargent & Co. ..... 40@40&10%
Slaymaker-Barry Co. ..... 30@35%
Snow's Victor ..... 50&10%

Elevator—

Stowell's 33⅓%

Padlocks—

Wrought Iron, list Dec. 8, '97 ..... *70@70&10%*
Dog Collar, S. B. Co. 40%
R. & E. Mfg. Co. Wrt. Steel a d Brass. 50%
S. B. & Co. 40%

Sash, &c.—

Fitch's Bronze and Brass 66⅔%
Fitch's Iron 70%
Ives' Patent ..... 62½&10@66⅔&10%
Payson's Perfect 70%
Payson's Signal (new list) 75%
Reading ..... 60&10&10@70%

Machines—

Boring—

	Without Augers. Upright.	Angular.
Douglas	$2.50	$3.00
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75

Hoisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 20%

Washing—

Wayne American, ₱ doz.	$27.00	Carload lots 10% off, freight allowed.
Western Star, No. 2, ₱ doz.	28.00	
Western Star, No. 3, ₱ doz.	30.00	
St. Louis, No. 41, ₱ doz..	60.00	

Mallets—

Hickory ..... *50@50&10%*
Lignumvitæ ..... *50@50&10%*
Tinners', Hickory and Applewood, doz. ..... *50@55c*
Fiber Head Stearns' ..... 30&10%

Mattocks—

List Feb. 23, 1899 ..... *65@65&10%*

Meat Cutters—

See *Cutters, Meat.*

Milk Cans—See *Cans, Milk.*

Mills— Coffee—

Box and Side, list Jan. 1, '88 ..... *60&5@60&10&5%*

Net prices are often made on some goods which are lower than above discounts.

Enterprise Mfg. Co., list Jan. 17, '93.. 30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor.... 60&10%
Parker's Upright ..... 30&10@40%
Swift, Lane Bros. 30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are generally quoted.

	10	*12*	*14*	*16-inch*
Cheap				*$1.60@$1.75*
Good	*3.00*	*3.25*	*3.50*	*3.75*
High Grade	*4.00*	*4.25*	*4.50*	*4.75*

Pennsylvania and Continental... 60&10%
Philadelphia:
Styles M., S., C., K., T. ..... 70&10%
Style A, all Steel ..... 60&10%
Style E, Low Wheel ..... 60&10%
Style E, High Wheel ..... 50&10%
Drexel and Gold Coin, low list 50%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899 ..... *80@....%*
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos.	6	7	8	9	10	
A. C.	25¢	23¢	22¢	21¢	21¢	40&10&5%
Capewell	19¢	18¢	17¢	16¢	16¢	10&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	..40%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Maud S.	25¢	23¢	22¢	21¢	21¢	50&10&5%
Neponset	23¢	21¢	20¢	19¢	18¢	..40%
Putnam	23¢	21¢	20¢	19¢	18¢	.33⅓%
Standard	23¢	21¢	20¢	19¢	18¢	..40%
Star	23¢	21¢	20¢	19¢	18¢	35& 5%
Vulcan	23¢	21¢	20¢	19¢	18¢	33⅓&5%

Picture—

	1½	*2*	*2½*	*3*	*3½ in.*
Brass Head.	*.90*	*.95*	*1.00*	*1.05*	*1.10 gro.*
Por. Head...	*.85*	*.90*	*.95*	*1.10*	*1.15 gro.*

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—

List Feb. 1, '99.

Cold Punched.	*Mfrs. or U. S. Standard*	*Off list.*
Hexagon, plain	*4.10@4*	*30c*
Square, plain	*4.10@4.30*	*c*
Square, C. T. & R.	*3.90@4.10*	*c*
Hexagon, C. T. & R.	*4.40@4.60*	*c*
Hot Pressed:		
Mfrs., U. S. or Nar. Gauge Stan'd. Square	*4.40@4*	*60c*
Hexagon	*4.60@4.80*	*c*

NOTE.—*Tapped Nuts are now 2-10c. higher than above.*

Oakum—

Best or Government ..... *lb. 5¾c*
Navy ..... *lb. 4¾c*
U. S. Navy ..... *lb. 3¼c*
Plumbers' Spun Navy *2¾c*
In carload lots ¼c lb. off f.o b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper ..... *40&10@50%*
Tin or Steel ..... *60@10@10@70@5%*
Zinc ..... *60@5@65%*
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co .... 70@70&10%

Openers, Can—

French ..... *doz 35c*
Iron Handle ..... *doz. 25@27c*
Sprague, Iron Hdle..per doz 35@40c
Sardine Scissors...doz. $1.75@$3.00
National, ₱ gro. ..... $1.75@$2.00
Stowell's ..... 75&10%

Packing—

Rubber—

Standard, fair quality .... 70&10@75%
Inferior quality ..... 75&10@80%
Extra ..... 60&5@60&10&5%
Jenkins' Standard, ₱ ℔ 80¢.... 25@25&5%

Miscellaneous—

American Packing ..... *9@10c lb.*
Cotton Packing ..... *13@14c lb.*
Italian Packing ..... *10½@11¼c lb.*
Jute ..... *5@5¼c lb.*
Russia Packing ..... *12@13c lb.*

Pails—

Creamery—

S. S. & Co., with gauges.. No 1 $6.50; No. 2, $5.75 ₱ doz.

Galvanized—

Inch.....	*10*	*12*	*14*
Water, Standard, gro	*$23 00*	*$26 00*	*$29.00*
Water, Regular	*19.00*	*22.00*	*25.00*
Water, Heavy	*23.00*	*25.50*	*28.00*
Fire, Rd. Bottom, gro	*31.00*	*33.00*	*35.00*
Well, gro	*27.00*	*29.00*	*31.00*

Pans—

Dripping—

Large Sizes ..... *lb. 4¾c*
Small Sizes ..... *lb. 5¼c*

Fry—

Standard List ..... *80@80&10%*

Roasting and Baking—

Regal, S. S. & Co., ₱ doz., Nos. 5, $4.50; 10, $5.00; 20 $5.50; 30, $6.00
Simplex, ₱ gro., No. 40, $28.00; 50, $31.50; 60 $35 00; 140, $31.00; 150, $34 50; 160, $39.00.

Paper—

Building Paper—

	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt., 20 sq. ft. to lb.	*$0 40@0 45*
Medium wt., 12 sq. ft. to lb	*$0.60@0.65*
Heavy wt., extra quality.	*$0.95@1.05*
Medium Grades Water Proof Sheathing	*$0 80@1.25*
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	*$45.00@50.00*
York Haven Waterproof Sheathing	$1 35@1.75

Tarred Paper.

1 ply (roll 400 sq ft), ton ..... *$35 00@40.00*
2 ply, roll 100 sq. ft *90c*
3 ply, roll 100 sq. ft *$1.20*

Sand and Emery—

List April 19, 1886...60&5@50&10&5%

Parers—

Apple—

Advance	₱ doz.	$4.50
Baldwin	₱ doz.	$5.00
Bonanza	each	$5.00
Dandy	each	$7.50
Eureka, 1898	each	$16.00
Family Bay State	₱ doz.	$12.00
Hudson's Li tle Star	₱ doz.	$4.00
Hudson's Rocking Table	₱ doz	$5.50
Improved Bay State	₱ doz.	$27.00@30.00
New Lightning	₱ doz.	$5.50
Reading 72	₱ doz.	$4.00
Reading 78	₱ doz.	$7.00
Turn Table '98	₱ doz.	$5.50
White Mountain	₱ doz.	$4.00

Potato—

Saratoga	₱ doz.	$5.50
White Mountain	₱ doz.	$4.50

Picks and Mattocks—

List Feb 23, 1899 ..... *65@65&10%*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Escutcheon—

Brass ..... *60@60&5%*
Iron, list Nov. 11, '85 ..... *60@60&5%*

Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in ..... *50@50&10%*
Extra Heavy, 2-6 in ..... *50&10@60%*
Fittings ..... *60@60&10%*

Pipe, Wrought Iron—

Factory Shipments.

List February, 1899.
Plain and Galvanized:
Carload lots ..... *50&10@50&10&10%*
Less than carload lots ..... *50&5@50&10%*
Screw and Socket Casing ..... *40&5%*
Inserted Joint Casing ..... *35&5%*
Cold Drawn Seamless Steel Tubing *60%*

Planes and Plane Irons—

Wood Planes—

Molding ..... *40&2½@40&5%*
Bench, First quality ..... *45&10@45&10&5%*
Bench, Second quality ..... *50&10@50&10&5%*
Bailey's (Stanley R. & L. Co) 50&10&10@50&10&10%

Iron Planes—

Bailey's (Stanley R. & L. Co) 50&10&10@50&10&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10&10@25&10&10&10%
Sargent's ..... 50&10@60%

Plane Irons—

Wood Bench Plane Irons ..... *30&5@30&10%*
Buck Bros. 30%
Butcher's ..... $5.00@5.25 to £
Stanley R. & L. Co... 50&10@50&10&10%
L. & L. J. White ..... 20&5@25%

Plates—

Felloe ..... *lb. 3½@3¾c*
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00 ..... 50%

Pliers and Nippers—

	7	*8*	*9*	*10-in.*
Best		*$3.25*	*$5.00*	*$4.75 doz.*
Good	*$1.40*	*2.25*	*2.75*	*3.25 doz.*

Acme Nippers 50%
Bernard's:
Parallel Pliers, &c 33⅓%
Paragon Pl ers 50%
Lodi Pliers 50%
Elm City Fence Pliers 33⅓%
Button's ..... 65@70%
Heller's Farriers' Pincers and Tools ..... 40@40&5%
Morrill's Parallel, ₱ doz. $12.00 ..... 30&5%
P., S. & W. Cast Steel ..... 30&10@40%
P., S. & W. Tinners' Cutting Nippers ..... 40@40&5%
Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Plumbs and Levels ..... *70¢10¢10@75¢10¢10%*
Disston's 70%
Pocket Levels ..... 75&10&10@75&10%
Stanley R. & L. Co. ..... 70&10&10@70&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $7.20; No. 2, $11.00; No. 3, $11.00; No. 4, $14.50 ..... 50%

Points, Claziers'—

Bulk and 1 lb. papers.. lb, 10½@11½c
½-lb. papers ..... lb. 11 @12 c
¼-lb. papers ..... lb. 11½@13½c

Pokes, Animal—

Ft. Madison Hawkeye ..... ₱ doz. $3.25
Ft. Madison, Western ..... ₱ doz. $3.75

Police Goods—

Manufacturers' Lists ..... *25@25&10%*
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (¼ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72 ..... 40%
Prestoline Paste ..... 33⅓&40%
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ½ ℔ boxes, ₱ doz $1.25; 1 ℔ boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₱ doz. $1.50

Stove—

Joseph Dixon's, ₱ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₱ ℔ 8¢
Fireside ..... ₱ gr. $2.50
Gem, ₱ gr. $4.50 ..... 10%
Japanese ..... ₱ gr. $3.50
Jet Black ..... ₱ gr. $3.50
Wynn's Black Silk, 5 ℔ pail ..... ₱ ℔ 12¢
Wynn's Black Silk, ½ ℔ box, ₱ doz. $1.00
Wynn's Black Silk, 5 oz. box, ₱ doz. $0.75
Wynn's Black Silk, 8 oz. liq., ₱ doz. $1.00

Poppers, Corn—

Round or Square:
1 qt ..... *gro. $7.00@$8.00*
1½ qt ..... *gro. 9 00@ 10.00*
2 qt ..... *gro. 10.50@ 11.50*
Quincy Corn Popper, 1 qt., ₱ gr. $18.00; 2 qt., $24.00.

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Enameled ..... *40¢10@50%*
Tinned ..... *40@5@45%*

Powder—

In Canisters:
Duck, 1 lb. each *15c*
Fine Sporting, 1 lb. each *75c*
Rifle, ½-lb. each *15c*
Rifle, 1-lb. each *25c*
In Kegs:
Duck, 6½-lb. kegs *$2.25*
Duck, 12½-lb. kegs *$4.25*
Duck, 25-lb kegs *$8.00*
Rifle, 6¼-lb. kegs *$2.25*
Rifle, 12½-lb. kegs *$4.25*
Rifle, 25-lb. kegs *$8.00*
King's Smokeless:
Keg (25 ℔ bulk) $20 00
Half Keg (12½ ℔ bulk) $10.25
Quarter Keg (6¼ ℔ bulk) $5.25
Canister (1 ℔ bulk) $0.90
Case, 1 ℔ Canisters (50 ℔ bulk) $45.00
Half Case, 1 ℔ Canisters (25 ℔ bulk) $22.75
25&10&2%
King's Semi-Smokeless:
Keg (25 ℔ bulk) $16.00
Half Keg (12½ ℔ bulk) $8.25
Quarter Keg (6¼ ℔ bulk) $4.75
One Pound Can, bulk $0.50
30&5%

Presses—

Fruit and Jelly—

Enterprise Mfg. Co. ..... 30@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—

Crown, ₱ doz. $18.00 ..... 50%
Crown Prince, ₱ doz. $15.00 ..... 50%
Diamond B, No. 2, doz. $22.; No. 3, $11 ..... 40%
Eureka, 5 ℔, doz., $16.00; 3 ℔ $15... 40%
Giant, No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15 ..... 40%
National, ₱ doz. $24.00 ..... 50%
Pelican, ₱ doz. $9.00 ..... 15&10%
Scranton No. 1 and 2, ₱ doz. $9.00
Scranton, No. 3, ₱ doz. $8.50

Pulleys—

Hay Fork, Swivel or Solid Eye..... doz. $1.60@2.00

Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₩ doz. $12.00..... 40%
Hot House, Awning, &c.....60@60&10%
Japanned Clothes Line.....60@60&10%
Japanned Screw.....70&10&10%
Japanned Side.....70&10&10%
Stowell'sCeiling or End, Anti-Friction 60%
Stowell'sDumb Waiter, Anti-Friction .. 60&10%
Stowell's Electric Light.....50%
Stowell's Side, Anti-Friction.....60%
Sash (Auger Mortise):
Common Sense, 1¾ in., ₩ doz., 18¢; 2 in., 20¢.
Empire.....1¾ in., 17¢; 2 in., 19¢
I. C.....1¾ in., 15¢; 2 in., 17¢
Ideal No. 13.....1¾ in., ₩ doz., 18¢
Improved.....1¾ in., 17¢; 2 in., 19¢
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy.....1¾ in., 15¢; 2 in., 19¢
Star.....1¾ in., 16¢; 2 in., 19¢
Acme.....1¾ in., 18¢; 2 in., 20¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@60&5%
Pitcher Spout.....75%
Pump Leathers, all sizes.....gro. $6.00
Flint & Walling's Fast Mail.....50@55%
Flint & Walling's Pitcher Spout 75%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....20%

Punches—

Revolving (4 tubes)...doz. $3.50@3.75
Saddlers' or Drive, good..doz. 65@70c
Spring, good quality.....$1.70@1.80
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50&5%
Niagara Hollow Punches.....45%
Niagara Solid Punches.....55%
Spring, Leachs Pat.....15%
Steel Screw, B & K. Mfg. Co.....40%
Tinners' Hollow, P., S. & W. Co..... 35@35&5%
Tinners' Solid, P., S. & W.Co., ₩ doz., $1.44.....55%

Rail—

Barn Door, &c.—

Barn Door, Light..In.	½	⅝	¾
100 feet.....	*$2.00*	*$2.50*	*$3.00*

B. D., for N. E. Hangers:	*Small.*	*Med.*	*Large.*
100 feet.....	*$2.20*	*2.70*	*3.20*

Sliding Door, Bronzed Wr't Iron, ft. 6¼c
Sliding Door, Iron Painted....2½@3c
Sliding Door, Wrought Brass, 1¼ in.... lb. 36c..30%
Cronk's Double Braced Steel Rail, ₩ foot..... 3½¢
Lanes' O. N. T., ₩ 100 ft., 1 inch....$3.00
Lanes' Standard, ₩ 100 ft.....4.25
McKinney's None Better.....₩ ft. 3¢
McKinney's Standard.....₩ ft. 3½¢
Moore's, Wr't. Bracket, Steel .....3½¢
Stowell's Steel Rail.....35&10%
Terry's Steel Rail.....₩ ft. 3½¢

Rakes—

Aug 1, 1899, List:
Cast Steel.....70c5c&2%
Malleable.....66⅔%
Fort Madison Red Head Lawn.....$3.25
Fort Madison Blue Head Lawn.....$3.00

Rasps, Horse—

Disston's 75%
Heller Bros.....60&10&10%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razor Strops—

See *Strops, Razor.*

Reels—

Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 002904PN, 0924 and 0924N, 5009N and PN.....40&10%

Registers—

For points on Mississippi River and East:
Black Japanned.....30%
White Japanned.....25%
Bronzed Finishes.....30%
Nickel Plated.....30&10%
Electro Plated in Brass, &c..30&10%
White Porcelain.....20%
Solid Brass and Bronze Metal..20%
Note.—Higher prices are quoted in territory further West.

Rings and Ringers—

Bull Rings—

	2	2½	3 Inch.
Steel.....	*$0.75*	*0.83*	*0.88 doz.*
Copper.....	*1.10*	*1.30*	*1.50 doz.*

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $3.75@4.00
Hill's Ringers, G I.....doz. 50@55c
Blair's Rings..... ₩ doz. 55@60¢
Blair's Ringers ..... ₩ doz. 70 @75¢
Brown's Rings..... ₩ gro. $4.25@4.50
Brown's Ringers..... ₩ doz 55¢@60¢
Perfect Rings ..... ₩ gro. $7.25@7.75
Perfect Ringers, ₩ doz.....75@80¢

Rivets and Burrs—

Copper.....40c&10@50%
Iron or Steel:
Tinners' .....55@55 c&10%
Miscellaneous .....55@55 c&10%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction ....50&10%
Barn Door, Sargent's list.60&10&10@70%
Lane's, Stay ....33⅓&5%
Stowell's Barn Door Stay...₩ doz. $1.00

Rope—

Manila, 7-16 in. and larger. lb. .. @15 c
Manila.....⅜-inch lb. .. @15½c
Manila, ¼ and 5-16 in. lb. .. @16 c
Manila, Tarred Rope, 15 thread.....lb .. @15 c
Manila Hay Rope Med'm.lb .. @15 c
Sisal, 7-16 in. and larger,lb. .. @10½c
Sisal..... .....⅜-inch. lb... @11 c
Sisal.....¼ and 5-16 in. lb. .. @11½c
Sisal, Hay Rope, 2 to 10 ply.....lb. .. @10½c
Sisal, Tarred, Medium Lath Yarn.....lb... @10 c
Cotton Rope:
Best, ¼-in. and larger..lb. 13@14 c
Med'm, ¼-in. and larger lb. 10@12 c
Com., ¼-in. and larger.lb. 8@10 c
Jute Rope.....lb. .. @5¾c

Wire Rope—

List July 1, '99.....30c&2½%

Ropes, Hammock—

Covert Mfg. Co.....45&2%
Covert Saddlery Works.....60%

Rules—

Boxwood..75c&10c&10c&10@75c&10c&10c&10c&10c&10%
Ivory ...40c&10c&10@40c&10c&10c&10c&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber ....50&10%
Stanley R. & L. Co.:
Boxwood..... 75&10&10@75&10&10&10&10%
Ivory..... .40&10&10@40&10&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Note.—Extra 5% often given on Circulars, Cross Cuts, &c., and extra 5@7½ on Hand, Butcher, &c.

Atkins' Circular.....50%
Atkins' Band.....50%
Atkins' Cross Cuts.....40%
Atkins' Mulay, Mill and Drag.....50%
Atkins' One-Man Saw.....40&10%
Atkins' Wood Saws .....40&10%
Atkins' Hand, Compass, &c..... ....40%
Disston Circular Solid and Inserted Tooth..... 50%
Disston Band 2 to 14 in. wide.....60%
Disston Band ¼ to 1¾.....70%
Disston Crosscuts.....50%
Disston Narrow Crosscuts.....55%
Disston Mulay, Mill and Drag..... .....50%
Disston Framed Woodsaws.....35%
Disston Woodsaw Blades.....40%
Disston Woodsaw Rods..... 25%
Disston Handsaws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8.....25%
Disston Hand Saws, Nos. 7, 107, 10⅓, 3, 1, 0, 00, Combination.....30%
Disston Compass, Keyhole, &c.....25%
Disston Butcher Saws and Blades....35%
C. E. Jennings & Co.'s.....25&5@30&5%
Peace Circular and Mill..... 45&10%
Peace Cross Cuts, list Jan. 1,'99,45&10&5%
Peace Hand, Panel and Rip....25&10&5%
Richardson's Circular and Mill...45&10%
Richardson's X Cuts, list Jan. 1, '93, 45&10&5%
Richardson's Hand, &c..... 25&10&5%
Simonds' Circular Saws.....50%
Simonds' Crescent Ground Cross Cut Saws.....35%
Simonds' One-Man Cross Cuts....40&10%
Simonds' Gang Mill, Mulay and Drag Saws.....45@45&5%

Hack Saws—

Disston Concave Blades.....25%
Disston Keystone.....30%
Disston Hack Saw Frames.....30%
Griffin's complete.....50@50&10%
Griffin's Hack Saw Blades....50@50&10%
Star Hack Saws and Blades..... 15&10%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete $4.00.....15&10%

Scale Beams—See *Beams, Scale.*

Scales—

Family, Turnbull's.... ...30@30&10%
Hatch, Counter:
Platform, 4 sb. by ¼ oz...doz. $5.75
Two Platforms, 8 lb. by ½ oz..... doz. $16 00
Union Platform, Plain....$2.00@2.10
Union Platform, Striped..$2.15@2 25
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Chatillon's Grocers' Trip Scales.....50%
Pelouze Scales—Family, Candy, Grocers' and Postal 33⅓%
"The Standard" Portables.....45@50%
"The Standard" R. R. and Wagon....60%

Scrapers—

Box, 1 Handle .....doz $2.25@2.75
Box, 2 Handle..... ... doz. $3.75@4.00
Ship, No. 1, doz. $3.50; No 2. $2.25@2.40
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....40&10%
Foot, W. E. Pratt Mfg. Co..... ₩ doz. $1.15@$1.25

Screen Window and Door Frames—See *Frames.*

Screw Drivers—See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron..doz. 1 in., $2.40@2.50; 1¼, $2.60@2.65; 1¼, $3.85@3.50
Bench, Wood, Beech..doz. $2.00@2.20
Hand, Wood.....35@40%
Hand, Grand Rapids.....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99.....65c&10@....%
Coach and Lag, Gimlet Point, list Oct. 1, '99.....65&5@....%
Hand Rail, list Jan. 1, '81....82½&2%

Jack Screws—

Millers Falls.....50&10&10%
Millers Falls, Roller .....50&10%
P., S. & W.....40&5@40&10%
Sargent.....60&10@60&10&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.....50%
Flat or Round Head, Brass.....50%

Set and Cap—

Set (Iron or Steel) 60%
Sq. Hd. Cap.....55%
Hex. Hd. Cap.....50%

Wood—

List Nov. 10, 1898. Discounts adopted June 23, '99.
Flat Head, Iron.....80%
Round Head, Iron.....75%
Flat Head, Brass.....77½%
Round Head, Brass.....72½%
Flat Head, Bronze.....72½%
Round Head, Bronze.....70%
Drive Screws.....82½%
Note.—An extra 5 or 10% is often given.

Scroll Saws—See *Saws, Scroll.*

Scythes

Scythe Snaths—See *Snaths, Scythe.*

Seeders—

Raisin—

Enterprise.....25@30%

Sets—

Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls doz. $2.00@2 25
Wood Hdle., 14 Awls, 6 Tools.... doz. $2.50@2.60
Aiken's Sets, Awl and Tools:
No. 20, ₩ doz. $10.00.60&10@60&10&5%
Fray's Adj. Tool H'dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7..... .....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....40&10@40&10&5%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe ... ₩ doz.....$9.00

Nail—

Round, assorted.....gro. $3.25@3.75
Octagon.....gro. $4.25@4.75
Knurled, Good.....gro. $6.00@6.50
Buck Brothers.....37½%
Cannon's Diamond Point, ₩ gr. $12..25%
Snell's Corrugated, Cup Pt.....50%
Snell's Knurled, Cup Pt..... ....60%

Rivet—

Regular list.....70@70c&10c&5%

Saw—

Aiken's Genuine.....₩ doz. $4.50@5.00
Aiken's Imitation .....₩ doz. $3.00@3.10
Atkin's Criterion.....₩ doz. $6.00
Atkin's Adjustable.....₩ doz. $8.00
Bemis & Call Co.'s Cross Cut.....30&5%
Bemis & Call Co.'s Plate.....30%
Bemis & Call Spring Hammer.....30&5%
Disston's Star and Mona ch.....25%
Hammer, Bemis & Call Co.'s new Pat.45%
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00.40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
No. 11, $16.00.....40&20%
Taintor Positive, ₩ doz. $18 .....60%

Sharpeners, Knife—

Tanite Mills ₩ gross, $14.40....25@33⅓%

Shaves, Spoke—

Iron..... ....doz. $1 00@1 25
Wood.....doz. $1.75@2.25
Bailey's (Stanley R. & L. Co.).....50&10%
Goodell's, ₩ doz. $9.00.....15&10%

Shears—

Cast Iron...	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good.....	*$13.00*	*15.00*	*17 00 gro.*
Cheap.... ..	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap.....70c&5@70c&10%
" Nickel..60c&5@60c&10%
Fair qual. Jap...80c&10@80c10c&10%
" Nickel.....75c&5@75c&10%
Tailors' Shears.....40@40c&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....40@40&5%
National Cutlery Co., Nickel.....60&10%
National Cutlery Co., En Hdls...70&10%
Seymour's, Jap.....70@70&5%
Seymour's Nickel .....60@60&5%
Seymour's Tailors' Shears.....40%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....15%

Tinners' Snips—

Forged Handles, Steel Blades..20c&10%
Malleable Handles, Laid with Steel, 40%
Forged Handles, Steel Blades, Berlin, 40c&10%
Niagara Snips.....40%
Seymour's..... .....40@40&5

Pruning Shears and Tools—

Disston's Combined Pruning Hook and Saw, ₩ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₩ doz. $12.00 25@25&10%

John T. Henry Mfg. Company:
Pruning Shears all grades.....50&5%
Orange Shears.....50&30%
Grape.....50&10%
Tree Pruners.....75%
P., S. & W. Co.....33⅓@33⅓&10%
Seymour's.....60&10&10@70&5%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller.....60&10@60&10&5%
Patent Roller Hatfield's, Sargent's list, 80&10@80&10&7%
Reading..... .....70&10@75%
R. & E..... .....45&10%
Wrightsville, Hatfield Pattern....80&10%

Sliding Shutter—

Reading list.....70&10@75%
R. & E.....60@60&10%
Sargent's list.....50&5@50&10&5%

Shells—

Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Club, Rival, Climax, 10 and 12 gauge .. 65&5%

Paper Shells, Empty:
Club, Rival, Climax, 14, 16 and 20 gauge ($7.50 list).....20&10&5%
Club, Rival, Climax, 10 and 12 gauge . 33⅓&5%
Acme, Leader, New Rapid, Smokeless, 10, 12, 16 and 20 gauge..... 33⅓&10&5%
Trap and Metal Lined, 10, 12 16 and 20 gauge.....33⅓&10&5%
Primrose Club, Blue Rival, Yellow Rival, New Climax, 10, 12, 16 and 20 gauge.....20%
High Base, Nitro, Repeater, Defiance, 10, 12, 16 and 20 gauge.....15%

Shells, Loaded—

Loaded with Black Powder..... 40c&5%
Loaded with Nitro Powder..... 40c&10c&10c&5%

Ship Tools—

L. & I. J. White 25%

Shoes, Horse, Mule, &c.—

Factory Shipments:
Horse and Mule, per keg...$3.50@3 60
Burden's, all sizes.....$3 50
Bryden, Phœnix, Perkins, &c $3.60
Diamond State, Shoenberger, Crescent, &c. $3.60..... ...5%

Shot—

Drop, up to B, 25-lb. bag...$1.35@1.45
Drop, up to B, 5-lb. bag ..... .30
Drop, B and larger, 25-lb. bag..... $1.60@1.70
Drop, B and larger, 5-lb bag. 35
Buck, 25 lb. bag..... .....$1.60@1.70
Buck, 5-lb. bag..... 35
Chilled, 25-lb. bag.....$1.60@1.70
Dust Shot, 25 lb. bag..... 2.00
Dust Shot, 5-lb. bag..... ... .50

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1, 1st Grade.	*B2, 2d Grade.*
Plain Back....	*$10.50*	*$9 60*
Strap Back....	*9.90*	*9 00*
Cleveland Pat'n	*10.20*	*9.30*

	C3, 3d Grade.	*D4, 4th Grade.*
Plain Back....	*$8.70*	*$8.10*
Strap Back....	*8.10*	*7.50*
Cleveland Pat'n	*8.40*	*7.80*

All other sizes add 30c doz.
Black deduct 30c doz.
Note.—The above recently advanced prices to small retailers are often cut by jobbers.

Shovels and Tongs—

Brass Head .....60&10@60&10&10%
Iron Head .....60&10@60&10&5%

Sieves and Sifters—

Hunter's Imitation, gro. $11.00@12.00
Buffalo Metallic, S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$10.00	$12.00	$13.20

Eclipse.....₱ gr. $9.00@ 9.50
Hunter's Genuine....₱ gr. $12.00@12.50
Shaker (Barler's Pat.) Flour Sifters.
₱ doz., $2.00.....35%

Sieves, Wooden Rim—

Mesh 18, Nested, doz.....$0.75@0.80
Mesh 20, Nested, doz..... .85@ .90
Mesh 24, Nested, doz ..... 1.00@1.05

Sinks—

Cast Iron—

Low list.....65@65&5%

NOTE.—*The low list is now generally used, but some jobbers use high list.*

Wrought Steel—

Columbus Galv'd and Enameled..60&5%
Columbus, Painted 45%
L. & G.... .....50%

Skeins, Wagon—

Malleable Iron.....
Steel .....35@35&5%
I. I. & B. Co. Steel.....35%

Slates—

"D" Slates.....50&10@50&10&10%
Unexcelled Noiseless Slates.....
60&5 tens@60&6 tens&5%
Wire Bound.....40&10@50%
Double Slates, add $1 case, net.

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German.....40@40&10%
Covert Mfg. Co.:
Derby.....35&2%
High Grade.....45&2%
Jockey.....40&2%
Trojan.....45&2%
Covert's Saddlery Works:
Banner.....60&10%
Crown.....60&10%
Triumph.....60&10%
W. & E. T. Fitch Co.:
Bristol .....40&10%
Empire.....50&5%
National.....50&5%
Clipper.....50&5%
Champion.....40%
Victor.....60&5%
Oneida Community:
Solid Steel.....65@65&10%
Solid Swivel.....65&10@65&10&10%
Sargent's Patent Guarded.....
60⅔@60⅔&10%

Snaths—

Scythe.....45&5%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Flat Ware.....50&10@50&10%
Wm. Rogers Mfg. Co.....50&10%

Miscellaneous—

German Silver .....60&10%
Wm. Rogers Mfg. Co.:
18% German Silver.....60%
Rogers' Silver Metal.....50&10%

Springs—

Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in....₱ doz. $1.10@1.25
Warner's No. 1, ₱ doz. $1.50; No. 2, $3.40.....55@55&10%
Victor (Coil).....60&10@60&10&5%

Carriage, Wagon, &c.

1¼ in. and wider...Blk. Hf Brt. Brt.
Tested and Temp 5½ 5¾ 6c lb
Oil Tested and Tempered..... 6½ 6¾ 7c lb
Cliff's Bolster Springs.....35%
Cliff's Seat Springs.....₱ pair 55¢

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated.... } *List May 1, '95..*
Steel and Iron... } 70@70&5@.....%
Rosewood Hdl. Try Square and T-Bevels .....60&10@10@70%
Iron Hdl. Try Squares and T-Bevels. 40&10@40&10&10%
Disston's Try Sq. and T-Bevels....60&10%
Winterbottom's Try and Miter...50&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0, $5.00; No. 1, $6.50; No. 2, $10.00.
Wood, Porcelain Lined:
Cheap .....doz. $1.00@2.75
Good Grade..... .doz. $3.00@5.50
Tinned Iron .....doz. $0.80@1.25
Iron, Porcelain Lined doz. $3.25@3.50
Jennings' Star.....₱ doz. $1.85@1.90
King.....₱ doz. $2.00

Staples—

Barbed Blind..... .....lb. 9@9½c
Electricians', Association list.....80%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting.....lb. 5½@6c
Grand Crossing Tack Co.'s list....75&10%

Steels, Butchers'—

Dick's.....40%
Foster Bros'.....30%
C. & A. Hoffmann's.....40%
Nichols Bros.....50%
John Wilson's, list Sept. 1, '94.....25%

Steelyards.....25@25&10%

Stocks and Dies—

Blacksmiths'.....40%
Gardner.....50%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%
Curtis Reversible Ratchet Die Stock.25%

Stone—

Scythe Stones—

Pike Mfg. Co., list '95-'96.....33⅓%
Cleveland Stone Co., list Nov., '92..33⅓%

Oil Stones, &c.

Pike Mfg. Co.:
Hindostan No. 1, ₱ lb...8¢
Sand Stone.....5¢
Turkey Oil Stone, Extra, 5 to 8 in.....80¢ } 33⅓@33⅓&10%
Turkey Slips.....$2.00
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 3 to 5½ in. $2.85
Arkansas Stone, No. 1, 5½ to 8 in. $3.50
} 33⅓@33⅓&10%
Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00; No. 2, $11.00, 40&20%

Stops, Window—

Ives' Patent.....25&5%
Taplin's.....45%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Straps, Box—

Cary's Universal, case lots.....20&10%

Stretchers, Carpet—

Cast Iron, Steel Points....doz. 55@65c
Cast Steel, Polished.....doz. $2.25
Socket.....doz. $1.75

Stuffers, Sausage—

Miles' Challenge, ₱ doz. $20...50@50&5%
Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....80%

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks:
American Blued.....90&10%
American Tinned.....90&10%
American Cut Tacks.....90%
Swedes Iron Tacks.....90&10%
Upholsterers' Tacks.....90&25%
Gimp Tacks.....90&25%
Lace Tacks.....90&25%
Trimmers' Tacks .....90&10%
Looking Glass Tacks.....70%
Bill Posters' and Railroad Tack... 90&20%
Hungarian Nails .....80&15%
Common and Patent Brads.....70&5%
Trunk and Clout Nails:
Blued.....75&5%
Tinned.....75&5%

Miscellaneous—

Double Point Tacks.....90&5@90&10%
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50&10@60%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.50
Emerald, S. S. & Co.....60-gal., $4.40
Queen City S. S. & Co., 30-gal.....$3.85
Queen City S. S. & Co., 60-gal.....$4.60

Tapes, Measuring—

American Asses' Skin..40&10@50&10%
Patent Leather.....30&5@30&10%
Steel..... .....40@40&5%
Chesterman's..... .....25@25&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899..... .....35%
Lufkin's Steel..... .....33⅓@35%
Lufkin's Metallic ....30&5%

Thermometers—

Tin Case.....80&10@80&10&10%

Ties, Bale—Steel.

Standard Wire.....50&10&5%

Ties, Wall—

Cleveland, Steel.....₱ 1000, $10.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White .....20@20&5%

Saw—

Atkins' new list.....40%
Simonds' 33⅓%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Oneida Pattern.....70&10@75&5%
Newnouse.....40@40&5%
Hawley & Norton. .....60&10@65%
Victor (Oneida Pattern)...70&5@70&10%
Star (Blake Pattern).....65@65&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes. 9@10c
Mouse, Round or Square Wire..... doz. $0.85@1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ₱ doz. $12.00; case of 24 $10.50
No. 3, Rat, ₱ doz. $5.50; case of 50 $5.00
No. 3½, Rat, ₱ doz. $4.50; case or 72 $4.00
No. 4, Mouse, ₱ doz. $3.50; case of 72 $2.75
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $30.00; Mouse, No. 3, $18.00.....50%
Out o' Sight, Mouse, No. 1, ₱ doz. 60¢; Rat, No. 2, $1.25; Mole, $6.00; Gopher, $1.50; Stop Thief, No. 1, $1.25; No. 2, $1.50.

Fly—

Balloon, Globe or Acme..... doz. $1.25; gro. $14.50@15.00
Harper, Champion or Paragon doz. $1.50; gro. $17.00

Trimmers, Spoke—

Bonney's Nos. 1 and 2.....40%
Douglas' ₱ doz. $9.00.....20%
Stearns'.....20&10%

Trowels—

Diston Brick and Pointing..... .....30%
Diston Plastering.....25%
Diston "Standard Brand" and Garden Trowels.....40%
Never-Break Steel Garden Trowels... gro. $7.00
Peace's Plastering.....25@25&5%
Rose Brick and Plastering.....25&5%
Woodrough & McParlin, Plastering.25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Daisy Stove Trucks, Improved pattern ₱ doz. $18.00

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*

Galvanized S. S. & Co., with Wringer Attachment, ₱ doz., No. 10, $6.25
No. 20, $6.75; No. 30.....$7.50

Twine—

Miscellaneous—

Flax Twine—	*BC*	*B.*
No. 9, ¼ and ½-lb. Balls..	*22c*	*26c*
No. 12, ¼ and ½-lb Balls..	*19c*	*22c*
No. 18, ¼ and ½-lb. Balls..	*16c*	*19c*
No. 24, ¼ and ½-lb. Balls..	*16c*	*19c*
No. 36, ¼ and ½-lb. Balls..	*15c*	*18c*

Chalk Line, Cotton, ½-lb. Balls.... 18@20c
Cotton Mops, 6, 9, 12 and 15 lb. to doz .....7@8c
Cotton Wrapping, 5 Balls to lb ... 9@16c
American 2-Ply Hemp, ¼ and ½-lb. Balls .....10@12c
American 3-Ply Hemp, 1-lb. Balls.. 10@18c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine). 9½c
India 3-Ply Hemp, 1-lb. Balls.... 9½c
India 3-Ply Hemp, 1½-lb. Balls.... 8½@9c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls.7½c
Mason Line, Linen, ½-lb. Balls.. 15c
No. 264 Mattress, ¼ and ½-lb. Balls.35c
Wool.....6c

Vises—

Solid Box.....50@.....%
Bonney's Saw Vises.....40&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard.....40%
Amateur.....25%
Bonney's.....40&10%
Fisher & Norris Double Screw....15&10%
Hollands'.....40@40&10%
Massey's Perfect.....20@25%
Massey's Clincher.....40@40&10%
Merrill's.....20%
Miller's Falls.....low list 10%
Parker's:
Victor.....20@25%
Regulars.....20@25%
Vulcan's.....40@45%
Combination Pipe.....55@60%
Prentiss.....20@25%
Sargent's.....66⅔@66⅔&10%
Simpson's Adjustable.....40%
Stephens'.....25@50%
Toles' Woodworking.....25%
Trenton.....40&5@40&10%

Saw Filers—

Bonney's, No. 1, $13; No. 3, $16 .50&10%
Disston's D 3 Clamp and Guide, ₱ doz $30.....25%
Reading.....40&10%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....30&7½%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60%
Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%

Wads—Price Per M.

B. E., 11 up	*60c*
B. E., 9 and 10	*70c*
B. E., 8	*80c*
B. E., 7	*80c*
P. E., 11 up	*$1.00*
P. E., 9 and 10	*1.25*
P. E., 8	*1.50*
P. E., 7	*1.50*
Ely's B. E., 11 and larger	*$1.70@1.75*
Ely's P. E., 12 to 20	*$3.00@3.25*

} *Dis. 20&5%*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List..... .....40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....60@60&7½%
Unground. .....65@65&10%
White Enameled Ware:
Muslin Kettles 75&10@75&10&5%
Boilers and Saucepans...55@55&5%
Tinned Boilers and Saucepans..... 55@55&5%

See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list July '99, 40%
Granite Ware, list Jan. 1, '94, revised Jan. 2, '95 .....40&10%
Second Quality, Agate Nickel Steel..65%
Second Quality, Granite.....
70&10@70&10&10%
Iron Clad:
Peppered Ware, high list.....70%
Princess Ware, special list.....33⅓%
Mottled Ware, big list.....75%
Never Break Enameled....50&5@50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch.....	*6*	*7*	*8*	*9*
Each.....	*40c*	*45c*	*50c*	*60c*

Steel Hollow Ware.

Avery Spiders & Griddles .....65@65&5%
Avery Kettles.....60%
Porcelained.....50&5@50&10%
Never Break Spiders and Griddles..... 65@65&5%
Never Break Kettles.....60@60&10%
Solid Steel Spiders & Griddles. 70@70&5%
Solid Steel Kettles.....60%
Solid Steel Ware, Enameled .....50&5%

Silver Plated Hollow—

William Rogers Mfg. Co.....40&10%

Washboards—

Solid Zinc: ₱ doz
Crescent, family size, bent frame..$3.00
Red Star, laundry size, stationary protector.....$4.95
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.50
Wilson, family size, bent frame...$2.50
Single Zinc Surface:
Naiad, protector, family size, open back perforated.....$2.95
Saginaw Globe, protector, family size, ventilated back.....$2.10
Wilson, bent frame, family size, ventilated back $2.10

Washers—
Leather, Axle—
Solid.....80&10c&10@85%
Patent.....85@85c&5%
Coil: ⅞ 1 1⅛ 1¼ *Inch.*
12c 13c 14c 16c *per 100*

Iron or Steel
Size bolt ... 5-16 ⅜ ½ ⅝ ¾
Washers....$6.20 5.30 4.00 3.80 3.60
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.
NOTE—*Jobbers' prices generally lower than manufacturers'.*

Washer Cutters—
See *Cutters, Washer.*

Washing Machines—
See *Machines, Washing.*

Water Coolers—
See *Coolers, Water.*

Weaners—
Tyler's New Halter—No. 1 ₩ doz. $3.45; No. 2, $3.70; No 3, $4.00; No. 4, $4 30
Tyler'sSafety—Nos. 1 and 2, ₩ doz. $1.70; No. 3, $2.00; No. 4, $2.30.

Wedges—
Oil Finish.....*lb.* 3¾@4c
Axe Finish.....*lb.* 4@4¼c

Weights, Sash
Carloads at factory.....$18.00@20.00
Less than carloads at factory.....$20.00@22.00
Note—*Some Foundries are naming higher prices.*

Well Buckets, Galvanized
See *Pails, Galvanized.*

Wheels Well—
8-in., $1 75@2.00; 10-in., $2.25@2.60; 12-in., $2.75@3.25; 14-in., $3.00@4.50

Wire and Wire Goods—
Market: Nos. 6 to 16:
Br. & Ann.....70c&5@72½&5
Cop'd.....65c&5@67½&5
Galv.....65c&5@67½&5
Tin'd, Tin'd list.....72½c&5@75%
Stone, Br. and Ann'd:
Nos. 19 to 26.....77½@77½c&2½&5
Nos. 27 to 36.....77½c&5@77½c&7½&5
Annealed Wire on Spools.....60c&10@60c&10c&5%
Brass, list Feb. 26, '96.....15%
Copper, list Feb. 26, '96.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to £, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
Iron and Brass, list July 1, 1899....80c&10@80c&10c&10%

Wire Cloth and Netting—
Galvanized Wire Netting.....80@80c&5%
Painted Screen Cloth per 100 ft...$1 30@ ...

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—
Agricultural.....75c&5@75c&10c&....%
Baxter's S.....70%
Coes' Genuine.....33⅓&10&5&5&3%
Coes' "Mechanics'.33⅓&10&10&5&5&3%
Acme.....60@60&5%
Aiken's Pocket (Bright).....$2.00@3.20
Alligator.....60&10&10%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&10%
Combination Bright.....40&5%
Cylinder or Gas Pipe.....50%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....40%
Boardman's.....33⅓%
Bull Dog, W. & B.....70@70&10%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Hercules.....70&10@75%
Solid Handles, P. S & W.....50%
Stevenson.....60&10&10%
Stillson's.....55%

Wrought Goods—
Stanles, Hooks, &c., list March 17, '92.....80c&20@85%

Yokes, Neck—
Covert Saddlery Works, Trimmed.60&5%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters'.....list net

Zinc—
Sheet.....*lb* 7¾c@8c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.... 7½@ 8¾
Lead, American White. in Oil:
Lots of 500 ℔ or over..... .. @ 6
Lots less than 500 ℔..... .. @ 6¼
Lead, White, in oil, 25 ℔ tin pails, add to keg price..... .. @ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price..... .. @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.. .. @ 1¼
Lead White, Dry in bbls..... .. @ 5¼
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry..... ₩ ℔ 4½@ 5
Zinc, Paris, Red Seal..... .. @ 8½
Zinc, Paris, Green Seal..... .. @ 9¼
Zinc, Antwerp, Red Seal..... 7½@ 8
Zinc, Antwerp, Green Seal..... @ 8½
Zinc, V. M. in Poppy Oil, G. Seal—
lots of 1 ton and over..... .. @11¾
lots less than 1 ton..... @12¼
Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over..... @10¼
lots of less than 1 ton..... @11¼
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%. No discount allowed on less than 10 bbl. lots.

Dry Colors.

Black, Carbon.....₩ ℔ 6 @10
Black, Drop, Amer..... 8 @ 9
Black, Drop, Eng..... 5 @10
Black, Ivory..... 9 @20
Blue, Celestial.....₩ ℔ 5½@ 8
Blue, Chinese.....33 @40
Blue, Prussian.....30 @35
Blue, Ultramarine..... 7 @35
Brown, Spanish..... ½@ 1
Brown, Vandyke, Amer..... 2½@ 5¾
Brown, Vandyke, Foreign..... 2½@ 5¾
Carmine, No. 40, in bulk.....$2.20@2.25
Carmine, No. 40, in ℔ bottles. 2.40@ ..
Carmine, No. 40, in ounce bot. 2.40@3.50
Green, Chrome, ordinary..... 5 @ 6
Green, Chrome, pure.....19 @35
Lead, Red, bbls. and ½ bbls.... .. @ 6
Lead, Red, kegs..... .. @ 6¼
Litharge, bbls. and ½ bbls..... .. @ 6
Litharge, kegs..... .. @ 6¼
Ocher, French Washed..... 1¼@ 2½
Ocher, German Washed..... 4½@ 5
Ocher, American ... ₩ ton $10.00@15.00
Orange Mineral, English.. ₩ ℔ 9 @ 9¾
Orange Mineral, French..... .. @11
Orange Mineral, German..... 9 @ 9¼
Orange Mineral, American.... 7¾@ 8
Red, Indian, English..... 4½@ 8½
Red, Indian, American..... 8 @ 8¾
Red, Turkey, English..... 7½@10
Red, Tuscan, English..... 7 @10
Red, Venetian, Amer., ₩ 100 ℔.80 @1.10
Red Venetian, English.₩ ℔.... 1¼@ 2
Sienna, Italian, Burnt and Powdered.....₩ ℔ 2¾@ 5
Sienna, Ital., Raw, Powd..... 2½@ 5
Sienna, American, Raw..... 1¼@ 1¼
Sienna, American, Burnt and Powdered.....₩ ℔ 1¼@ 1¼
Talc, French..... ₩ 100 ℔ $1.25 @1.50
Talc, American.....90 @1.10
Terra Alba, French, ₩ 100 ℔.. 80 @1.00
Terra Alba, English.....85 @1.00
Terra Alba, American No. 1....65 @70
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow.₩ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer..... 1¼@ 1¾
Umber, Raw, Amer..... 1¼@ 1¾
Yellow, Chrome.....10 @25
Vermilion, American Lead....10 @20
Vermilion, Quicksilver, bbls or kegs..... .. @69
Vermilion, Quicksilver, bags... .. @65
Vermilion, Quicks'r, sm'r pkgs. .. @69
Vermilion, English, Import.. .67 @68
Vermilion, Artificial..... 5 @20
Vermilion Chinese.... .....80 @90

Colors in Oil.

Black, Lampblack, Best..... 13 @14
Black, Lampblack, Common...10 @11
Blue, Chinese..... .....35 @40
Blue, Prussian.....30 @35
Blue, Ultramarine.....19 @16
Brown, Vandyke.....8 @13
Green, Chrome.....8 @14
Green, Paris.....20 @24
Sienna, Raw.....8 @13
Sienna, Burnt.....8 @13
Umber, Raw.....8 @12
Umber, Burnt.....8 @12

Miscellaneous.

Barytes, Foreign, ₩ ton....$18.00@20.00
Barytes, Amer. floated..... 18.00@20.00
Barytes, Crude..... 8.00@10.00
Chalk, in bulk.....₩ ton 2.15@ 2.25
Chalk, in bbls.....₩ 100 ℔ 35@ ..
China Clay, English..₩ ton 15.00@17.00
Cobalt, Oxide.....₩ 100 ℔ 2.00@ 2.10
Whiting, Common.₩ 100 ℔ .42½@ .50
Whiting, Gilders..... .47@ .56
Whiting, extra Gilders'.... .57@ .64

Putty.

In barrels and ½ bbls..... ..@1 7-10
In tubs..... .. @ 1¾
In tin cans..... .. @ 3¼
In bladders..... .. @2.20

Spirits Turpentine.

In Southern bbls..... .. @50¾
In machine bbls..... .. @51½

Glue.

Low Grade.....₩ ℔ 13 @15
Cabinet.....13 @16
Medium White.....14 @16
Extra White.....16 @25
French.....12 @25
Irish.....13 @15

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....₩ gal. 44 @45
Linseed, City, boiled.....46 @47
Linseed, State and West'n, raw 44 @45
Linseed, raw Calcutta seed..... @65
Lard, Prime City, present make 43 @45
Lard, Extra No. 1..... ....35 @37
Lard, No. 1..... .....31 @32
Cotton-seed, Crude..... .31 @31½
Cotton-seed, Summer Yellow, prime..... .26 @26¼
Cotton-seed Summer Yellow, off grades..... .. ..25 @25½
Sperm, Crude..... .. @ ..
Sperm, Natural Spring..... .. @ ..
Sperm, Bleached Spring..... .. @ ..
Sperm, Natural Winter..... @55
Sperm, Bleached Winter..... 60 @ ..
Whale, Crude..... .. @35
Whale, Natural Winter..... .. @45
Whale, Bleached Winter..... .. @48
Whale, Extra Bleached Win... .. @48
Menhaden, Crude, Sound.....25 @ ..
Menhaden, Light Pressed.....28 @29
Menhaden, Bleached Winter.... @32
Menhaden, Extra Bleached....34 @35
Tallow, Western, prime..... .44 @45
Cocoanut, Ceylon..... .. @ 5¾
Cocoanut, Cochin..... 7½@ 7¾
Cod, Domestic.....33 @35
Cod, Newfoundland.....34 @40
Red Elaine.....30 @32
Red Saponified.....₩ ℔ 4½@ 5
Bank.....₩ gal. .. @27
Straits..... @28
Olive, Italian, bbls.....52 @57
Neatsfoot, prime.....45 @50
Palm, prime, Lagos.....₩ ℔ .. @ 5¼

Mineral Oils.

Black, 29 gravity, 25@30 cold test.....₩ gal. 10½@11
Black, 29 gravity, 15 cold test. 11½@12
Black, summer..... 10 @10½
Cylinder, light filtered..... 14½@17
Cylinder, dark filtered..... 12½@17½
Paraffine, 903-907 gravity..... 10¾@11
Paraffine, 903 gravity..... 9¾@10
Paraffine, 883 gravity..... 9 @ 9¼
Paraffine, red, No. 1..... 10½@10¾
In small lots ½¢ advance.

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

NOVEMBER 8, 1899.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ lb; Square, 0.8¢ ₩ lb

1 to 1⅞ in. round and square	₩ lb 2.50@2.60¢
1⅛ to 4 in. x ⅜ to 1 in.	
Refined Iron:	
1 to 1⅞ in. round and square	₩ lb 2.60@2.70¢
1⅛ to 4 in. x ⅜ to 1 in.	
1⅛ to 4 in. x ¼ to 5-16	₩ lb 2.80@2.90¢
Rods—⅜ and 11-16 round and square	₩ lb 2.80@2.90¢
Angles:	Cts ₩ lb
3 in x ¼ in. and larger	3.25¢
3 to 3½ in. x 3-16 in.	3.25¢
1½ to 3 in. x ⅛ in	3.40¢
2½ to 2¾ in. x 3-16 in and thicker	3.30¢
1 to 1¼ in. x 3 16 in.	3.40¢
1 to 1¼ x ⅛ in.	3.50¢
⅞ x ⅛ in.	3.60¢
¾ x ⅛ in.	3.65¢
⅝ x ⅛ in.	4.50¢
½ x 3-32 in.	5.00¢
Tees:	
1 in.	3.70¢
1¼ to 2¼ in.	3.60¢
3 in. and larger	3.40¢
Beams	4.00¢
Channels	4.00¢
Bands—1¼ to 6 x 3-16 to No. 8	₩ lb 3.00 @ 3.10¢
"Burden's Best" Iron, base price	₩ lb 3.40¢
Burden's "H. B. & S. Iron, base price	₩ lb 3.20¢
"Ulster"	₩ lb 3.40¢
Norway Bars	4 @4½¢
Norway Shapes	4½@5 ¢

Merchant Steel from Store—

	per lb
Open Hearth and Bessemer Machinery	3.00 to 3 10¢
Toe Calk, Tire and Sleigh Shoe	$3.25@3.50¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	6 ¢

Soft Steel Sheets—

¼ inch	3.30¢	No. 14	3.40¢
3-16 inch	3.40¢	No. 16	3.50¢
No. 8	3.30¢	No. 18	3.55¢
No. 10	3.30¢	No. 20	3.60¢
No. 12	3.35¢	No. 22	3.65¢

Sheet Iron from Store.

Black.

	Common American.	R. G. Cleaned American.
Nos. 10 to 16	₩ lb, 3.45	3.45¢
Nos. 17 to 21	₩ lb, 3.50	3.55¢
Nos. 22 to 24	₩ lb, 3.55	3.65¢
Nos. 25 and 26	₩ lb, 3.60	3.70¢
No. 27	₩ lb, 3.65	3.75¢
No. 28	₩ lb, 3.70	3.85¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 10½¢
Patent Planished	₩ lb A, 9¾¢; B, 8¾¢, net.
Pateat Planished Sheet Steel	₩ lb 8½¢

Galvanized.

	B. B.
Nos. 10 to 16	₩ lb, 12¢
Nos. 17 to 21	₩ lb, 13¢
Nos. 22 to 24	₩ lb, 14¢
Nos. 25 to 26	₩ lb, 15¢
No. 27	₩ lb, 16¢
No. 28	₩ lb, 17¢
No. 29	₩ lb, 19¢
No. 30	₩ lb, 21¢

67½@70% off.

36 in. 1¢ ₩ lb higher.

Foreign Steel from Store—

Best Cast	₩ lb 14 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 14 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 14 ¢
2d quality	₩ lb 13 ¢
3d quality	₩ lb 11 ¢
R. Mushet's "Special"	₩ lb 46 ¢
" " " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 19 ¢
Hobson's Choice XX Extra Best	₩ lb 35 ¢
Jessop Self Hardening	₩ lb 40 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson Self-Hardening	₩ lb 40 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.

	Per lb
Banca, Pigs	33½@34¢
Straits, Pigs	32½@33¢
Straits in Bars	33½@34¢

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	$7.50
IX, 14 x 20	9.00
Melyn Grade:	
IC, 14 x 20	7.00
IX, 14 x 20	8.50
Allaway Grade:	
IC, 14 x 20	6.15
IX, 14 x 20	7.25

American Coke Plates—Bessemer—

IC, 14 x 20 108 lb	$5.30@5.40
IX, 14 x 20	6.25@6.30
IXX, 14 x 20	7.50@7.60

American Terne Plates—

IC, 20 x 28	$10.50
IX, 20 x 28	12.50

Tin Boiler Plates, American—

IXX, 14 x 26	112 sheets	$13.00
IXX, 14 x 28	112 sheets	14.00
IXX, 14 x 31	112 sheets	15.50

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake	18¼¢
Ansonia grade Casting	17¾@18¢

Sheet and Bolt—

February 2, 1899. Prices, in cents per pound. Sheet 30 x 60. Net.

Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	32 oz. to 64 oz., 25 to 50 lb.	24 oz. to 32 oz., 18¾ to 25 lb.	16 oz. to 24 oz., 12½ to 18¾ lb.	14 oz. and 15 oz., 11 to 12½ lb.	12 oz. and 13 oz., 9⅓ to 11 lb.	10 oz. and 11 oz., 7½ to 9⅓ lb.	8 oz. and 9 oz., 6¼ to 7½ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	22½	22½	22½	22½	23½	24½	25½	28½	31½
30	96	72	22½	22½	22½	22½	23½	25½	28½	31½	
30	.....	96	22½	22½	22½	23½	24½	28½	31½		
36	72	.....	22½	22½	22½	23½	24½	26½	29½	32½	
36	96	72	22½	22½	22½	23½	24½	28½	31½		
36	120	96	22½	22½	22½	23½	25½				
36	.....	120	22½	22½	23½	24½					
48	72	.....	22½	22½	23½	24½	26½	29½	32½		
48	96	72	22½	22½	23½	25½	27½	30½			
48	120	96	22½	22½	24½	26½	30½				
48	.....	120	22½	23½	25½	28½					
60	72	.....	22½	23½	25½	28½	28½	33½			
60	96	72	22½	23½	24½	25½	31½				
60	120	96	22½	23½	25½	28½					
60	.....	120	22½	24½	26½	30½					
72	96	.....	22½	23½	25½	30½					
72	144	96	22½	24½	27½	32½					
72	.....	144	23½	25½	30½						
108	120	.....	23½	25½	31½						
108	.....	120	25½	26½							
wider than 108	144	.....	26½	28½							
	.....	144	27½	30½							

Bolt Copper, ⅜ inch diameter and over, ₩ lb 22½¢

Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of Sheet Copper required to cut them from.

Cold or Hard Rolled Copper. 14 oz. ₩ square foot and heavier. 1¢ ₩ lb over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.

All Polished Copper, 20 in. wide and under, 1¢ ₩ lb advance over the price for Cold Rolled Copper.

All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ lb	26¼¢
12 oz. and up to 14 oz. to square foot, ₩ lb	27½¢
10 oz. and up to 12 oz., ₩ lb	29½¢
Lighter than 10 oz., ₩ lb	32½¢

Circles less than 8 in. diameter, 2¢ ₩ lb addit'onal.

Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

Nos.	0000 to 8 Base	9 and 10		11 and 12
	½¢	½¢		½¢ ₩ lb adv.
Nos.	13	14	15	16
	¾¢	⅞¢	1¢	1¼¢ ₩ lb adv.
Nos.	17	18	19	20
	1¼¢	2¢	2½¢	2¾¢ ₩ lb adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered. Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	⅛	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	9- 9	...	.....	...	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	32	31	30	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	71	56	48	44	42	41	40	39	38	37	37	36
23	22	76	61	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	21	23	25	27	28¢₩lb

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1896

Brown & Sharpe's gauge standard.

	Per lb.
Plain Round Tube, ¾ in. up to 2 in.	$0.35
" " ⅝ " ¾ "	.36
" " ½ " ⅝ "	.38
" " ⅜ " ½ "	.41
" " 5-16 " ⅜ "	.48
" " ¼ " 5-16 "	.65
" " 3-16 " ¼ "	1.00
" " ⅛ " 3-16 "	1.50
Smaller than ¼ inch	Special
3 inch and larger	.40
Over 3 inch to 3½ inch, inclusive	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.

Discount from list 20@25%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass	in.	in.	in.	in.	in.	in.	in.	in.	in.
Wider than and including	2 12	12 14	14 16	16 18	18 20	20 22	22 24	24 26	
To No. 20, inclusive	.23	.23	.25	.27	.29	.31	.33	.36	
Nos. 21, 22, 23 and 24	.23	.24	.26	.28	.30	.32	.34	.37	
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38	
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39	

Common High Brass	in.	in.	in.	in.	in.	in.	in.	in.
Wider than and including	26 28	28 30	30 32	32 34	34 36	36 38	38 40	
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.

Add ½¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List 10%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gild'g bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28½
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 10%; Copper Wire, NET. List November 16, 98.

Spring Wire, 2¢ ₩ lb advance.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ lb

Western Spelter	5¼@5¾¢

Zinc.

Duty: Sheet, 2¢ ₩ lb.

600 lb casks	8@8¼¢	Per lb	8¼@8¾¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	5@5¼¢
Bar	5¾¢
Pipe (full lengths), subject to discount 20%	6¾¢
Pipe (cut lengths), subject to discount 20%	7¼¢
Tin Lined Pipe, subject to discount 20%	12½¢
Block Tin Pipe, subject to discount 20%	18¢
Sheet (full rolls) subject to discount 20%	7¾¢
Sheet (cut rolls (subject to discount 20%	8¾¢

Old Lead in exchange, 4¢ ₩ lb.

Solder.

½ & ½ guaranteed	20½@21¢
No. 1	18@18½¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson	₩ lb 11½¢
Hallett's	₩ lb 10½¢
U. S.	₩ lb 10½¢

Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods, 13¢ ₩ lb.

No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting:

Small lots	₩ lb 37¢
100-lb lots	₩ lb 35¢

No. 2 Aluminum (guaranteed to be over 90 % pure), in ingots for remelting:

Small lots	₩ lb 34¢
100-lb lots	₩ lb 33¢

Aluminum Sheet, B. & S. gauge. 50 lb or more.

Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	₩ lb.	₩ lb.	₩ lb.
Nos. 13 to 19	$0.40	$0.42	$0.45
No. 20	.42	.44	.47
Nos. 21 to 23	.44	.46	.49
No. 24	.44	.48	.51
No. 25	.45	.49	.52
No. 26	.45	.52	.57
No. 27	.48	.55	.60
No. 28	.46	.53	.62
No. 29	.47	.58	.67
No. 30	.48	.62	.75

Note.—Lots of less than 50 lb 5¢ ₩ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9	₩ lb 40¢	No. 15	₩ lb 43¢
No. 9 to No. 10	₩ lb 40½¢	No. 17	₩ lb 50¢
No. 11	₩ lb 41 ¢	No. 18	₩ lb 55¢
No. 12	₩ lb 41½¢	No. 19	₩ lb 60¢
No. 13	₩ lb 42 ¢	N . 20	₩ lb 65¢
No 14	₩ lb 42½¢	No. 21	₩ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ lb 15 ¢
Light and Tinned Copper	₩ lb 13½¢
Heavy Brass	₩ lb 11 ¢
Light Brass	₩ lb 8½¢
Lead	₩ lb 3½¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 4 ¢
No. 1 Pewter	₩ lb 17 ¢
No. 2 Pewter	₩ lb 19 ¢
Tin Plate Scrap	₩ ton $5.00
Wrought Scrap Iron	₩ gross ton $15.50
Heavy Cast Scrap	₩ gross ton $14.00
Stove Plate Scrap	₩ gross ton $9.50
Burnt Iron	₩ gross ton $7.50